INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

UMI

A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor MI 48106-1346 USA
313/761-4700 800/521-0600

UNITED STATES ARMED FORCES' VOLUNTARY EDUCATION PROGRAM: THE EFFECT ON ENLISTED SERVICEMEMBER RETENTION

A

THESIS

Presented to the Faculty

of the University of Alaska Fairbanks

in Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF PHILOSOPHY

By

Kenneth Charles Brauchle, M.S.

Fairbanks, Alaska

December 1997

UNITED STATES ARMED FORCES' VOLUNTARY EDUCATION PROGRAM:

THE EFFECT ON ENLISTED SERVICEMEMBER RETENTION

By

Kenneth Charles Brauchle

RECOMMENDED:

Advisory Committee Chair

Director, School of Education

APPROVED:

Dean, College of Liberal Arts

Dean of the Graduate School

11-19-97

Date

Abstract

The United States Armed Forces have sponsored off-duty voluntary higher education programs for fifty years. The investment in these programs by the Armed Services is substantial. In 1996, Department of Defense (DOD) expenditures for Tuition Assistance programs totaled $121 million. The longevity and scope of these military programs make them an ideal special case through which to study the outcomes of employer sponsored off-duty education. This study looked at the relationship between participation in military sponsored off-duty education programs and enlisted retention in the service. The data for the study was from a large (60,000 respondents) survey conducted by the DOD in 1992. Both univariate and multi-variate statistical analysis techniques were used. Additionally, over thirty semi-structured interviews were conducted with service members. The quantitative analysis supports the conclusion that long-term participation in off-duty education is significantly and positively related to intention to reenlist in simple bi-variate models. However, when several other variables thought to be related to retention are controlled the overall education participation effect is very small, accounting for little of the variation in intention to reenlist. A comparison of the education participation pattern in this data with previous studies leads to the conclusion that there has been a fundamental change in the relationship between off-duty education and retention in the last ten to fifteen years. The qualitative data suggest that the military places a high value on educational participation exhibited in formal and informal policies, the organizational reward system, promotions and attitudes. The opportunity to participate varies by location, specific job and military specialty. Servicemembers' attitudes toward education appear to evolve. Early participation seems to be extrinsically motivated with an intrinsic motivation developing as the servicemember continues to participate. The quantitative and qualitative data support the conclusion that the military has changed in its view of educational participation. The data point to the conclusion that the military has adopted educational participation as an integral part of the military culture. This value is so embedded within the environment that the effect of educational participation may be masked by other variables such as satisfaction with the military way of like.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ACKNOWLEDGMENTS

Like all major undertakings, this project would not have been possible without the help and energy of many people. Foremost among those who contributed are the members of my faculty thesis committee. My sincere thank you to Dr. David Smith for his counsel, time and encouragement throughout this endeavor. The enthusiasm he showed early in the process was pivotal in my decision to take it on. Likewise, my gratitude to Dr. Janice Reynolds who helped me to put together a thesis committee and provided sage advise on refining and focusing the research question to a manageable scale. Dr. F. Lawrence Bennett willingly provided advise and guidance throughout my studies and research that kept me on track and on schedule. To my newest committee member, Dr. Perry Gilmore, my thanks for her selfless willingness in joining in this endeavor so late in the process. Had she not stepped in to replace a departed committee member the project would have been significantly delayed.

Besides my faculty committee members, there were several others who played a significant role in making this project a reality. Dr. John Kelly, University of Alaska Arctic Center for Applied Research, provided valuable and flawless advise which allowed me to put together the initial proposal from which this project was borne. Without Dr. Betty Maxfield at the Defense Manpower Data Center I would not have known about nor gained access to the 1992 Department of Defense survey data that were the center of this project. The support she and her staff provided during the analysis of the data was truly invaluable and totally beyond the call of duty. Dr. Clinton Anderson, consultant to the American Council on Education, provided encouragement and invaluable assistance in my literature search.

Finally, let me acknowledge the one person who provided the most assistance in this endeavor, my wife and helpmate of twenty-five years, Mary Brauchle. She was my editor, advisor, cheerleader and research assistant. She provided a pat on the back or a kick in pants as needed to keep me moving forward. Had she not provided unconditional support for me and this project I would have abandoned the quest long ago.

CHAPTER I

INTRODUCTION AND BACKGROUND

The aging of the work force, rapid changes in the application of technology and restructuring of business organizations have all contributed to the necessity of lifelong learning for those employed in the American economy. As employers deal with these changes in the work force, many have implemented or are considering employer sponsored or subsidized higher education programs. As their investment in these programs is considerable, employers would like to have a measure of the return on investment or value they receive from their sponsorship. Despite the large investment that US firms make each year in employee education, there is little information in the literature about the effectiveness of those programs in meeting the employer's goals (Vaughan, 1989).

The data that do exist on educational program effectiveness are spotty and inconsistent. The evidence suggests that few firms closely track their educational assistance programs (Lynton, 1983) and little is known about those that do (Rosow, 1979; Eurich, 1985). Lynton points out many reasons for the lack of consistent internal data from private corporations on their employer sponsored educational programs (Schendt, 1986). Regardless of the reasons, the fact remains that studying the effectiveness of employer sponsored educational assistance programs from the perspective of the employer's objectives is a difficult endeavor.

One alternative approach is to study a similar program where the data are available. The off-duty education tuition assistance programs sponsored by the Armed Forces offer a unique opportunity for the educational researcher. The United States' Armed Forces have been involved in employer sponsored off-duty education for fifty years. The services have provided tuition assistance to service members and formed cooperative arrangements with public and private institutions of higher education to meet the special needs of the military member (Rose, 1974).

The off-duty education programs sponsored by the military services are the forerunner of similar programs sponsored by private sector employers for their employees. As military off-duty education programs are quite mature and well documented, they provide a vehicle to examine the value of employer subsidized higher education programs from the perspective of the employer. The military has historically viewed the Voluntary Education Program as a recruitment and retention tool. Although the "value" of education is widely accepted by the military education community and the senior leadership, as competition for funds becomes intense within the Department of Defense, the question becomes, how valuable?

One desired program outcome cited frequently by both civilian and military employers is improving employee retention in the job, that is, reducing turnover. Particularly for the military, retention of employees (servicemembers) is a high priority endeavor because of the critical nature of staffing shortages and the large investment in terms of time and money needed to recruit and train servicemembers. The existing

literature on the subject of off-duty participation and service retention is sparse and describes mixed results. One can find evidence that participation in the education programs improves retention, reduces retention or has no effect on retention. The central hypothesis of this study is that participation in off-duty education is positively related to enlisted retention for some sub-groups within the services. This study will look at the relationship between participation in military sponsored off-duty education programs and retention in the service for sub-groups identified by education level, job satisfaction as well as several demographic factors. The aim of the study is to provide information useful for designing curricula and marketing programs to employers and their employees.

The "GI Bill" that provided educational benefits to the veterans of W.W.II, Korea and Vietnam, has provided the means for millions of ex-service members to pursue a college education upon discharge from the service. Since 1947 the Armed Services have recognized the need to provide educational opportunities to service members while they are still on active duty. This objective has been met through two methods. The services have provided "Tuition Assistance" (TA) to active duty members who are engaged in off-duty education programs leading to undergraduate and graduate degrees, 27,847 in fiscal year 1996 alone (Compart, 1997). In addition to the TA that provides the financial opportunity for the service member to attend college, the services have actively brought educational opportunities to the service member.

A system of on-base educational programs delivered by public and private institutions of higher education has been developed to meet the special needs of the

military member. Collectively, this system is called the Voluntary Education Program. The programs are tailored to the working hours of military members, their educational interests and vocational and professional career needs. These programs are delivered by both in-state and out-of-state institutions in facilities provided by the military services. While the academic integrity of the programs is under the control of the educational institutions, the curriculum, academic calendar, class hours and other administrative details are designed to meet the educational goals and needs of the military services (OSD, 1994).

This "custom built" approach is the forerunner of similar programs now being designed and delivered to working adult professionals. Many of these adult programs are sponsored or subsidized by employers and delivered on or near the job site. Programs of this nature exist in many high tech industries, non-profit organizations such as hospitals and even within government agencies such as local school districts. The National Technological University, a specialized institution formed solely to provide employer sponsored higher educational opportunities at the job site, alone reaches over 400 locations (NTU, 1992). The existence of these programs is based on the reality of the modern American work force. The maturing of the work force and the increasing pace of technological advancement in virtually all segments of the economy have intensified the need for additional education and training of adult workers. The direct benefits of training programs sponsored by employers is fairly well documented. The value received from the investment in educational programs is not as well defined. While much anecdotal evidence

of the benefits of an educated work force exists, little has been done to correlate specific job related goals with participation in employer financed educational programs.

The military sponsored Voluntary Education Programs have existed since May 1947 and are very mature. They have been adapted to meet the needs of the employer (the Department of Defense) who pays the bulk of the bill and the needs of the employees who must be induced to attend. Additionally, the military's centralized personnel system keeps significant amounts of historical data on its personnel that should provide some indication of the effectiveness of the educational programs in producing desirable outcomes. These programs provide an opportunity to study the value received by the employer for their investment in the program. Conclusions drawn from the study of the military programs should be transferable to similar programs sponsored by non-military employers.

The desirability of an educated work force is widely accepted by the services' senior leadership and within the military educational community. However, as the defense budget shrinks, in-service education programs are increasingly under fiscal pressures. Over the last few years all of the services have changed their policies on off-duty educational assistance because of budgetary pressures. Senior policy makers demand more evidence that sponsorship of off-duty voluntary education programs is beneficial to the military service. Professional educators in the military system have recently been seeking evidence of the benefits to the service of off-duty education programs so that they can defend voluntary education programs. For the educator involved with delivery of

programs to military students, insight on the outcomes from participation in off-duty education programs can provide information for the improvement of curriculum and proper marketing strategies. The need for research on the organizational benefits of off-duty educational programs is acute.

To answer the question of whether the off-duty educational programs are meeting the services' goals, those goals must be determined. There are several possible outcomes that the armed services might desire from their sponsorship of off-duty education programs. The stated objectives of the programs, however, are well documented in the literature. The programs have evolved over the years and the objectives of the programs with them. Excellent historical summaries have been written (Strehlow, 1967; Houle et al., 1947; Schwartz, 1963) that document the historical objectives of the programs and provide excellent bibliographic resources for further research. The last twenty years and the creation of the all volunteer military have brought significant changes in the program objectives (Congress of the U.S. 1989; Congress of the U.S. 1982; Congress of the U.S. 1983; OSD, 1994). The drastic downsizing of military forces of the last seven years has yet again changed the emphasis of the programs (Anderson, 1992). The literature and other documentary evidence provides ample evidence to form at least a preliminary answer to the question: *What are the stated objectives of these programs?* From the literature most, if not all of the desired outcomes, can be summarized as follows:

1. To aid in recruitment of high quality personnel.
2. Retain high quality personnel.

3. Prepare personnel for positions of greater responsibility.

4. Improve job performance in the present position.

5. Prepare personnel for reentry into the civilian work force.

6. Provide a "useful" morale activity to occupy the service member's spare time.

In their infancy, these programs were often intended to provide a worthwhile off-duty activity to keep the troops occupied and out of trouble or to allow them to keep up educationally with their civilian counterparts so that they could easily readjust to civilian life upon discharge (Strehlow, 1967; Houle et al., 1947; Schwartz, 1963). Over time, the primary purposes of the program changed. With the end of the draft and the inception of the All Volunteer Force (AVF) in 1972, off-duty education programs were seen as inducements to recruiting and retention (Fernandez, 1982; Congress of the U.S. 1980; Boesel et al., 1983). As the services, the Army in particular, experienced difficulty in meeting their goals for high quality recruits, extensive research was done on the effects of service sponsored education programs on recruitment (Boesel et al., 1984; Polich et al., 1982; Congress of the U.S. 1982; Fernandez, 1980; Fernandez, 1982; Congress of the U.S. 1980; Buddin, 1991; Boesel et al., 1983; Ramsberger, 1993). The relationship between recruitment and military sponsored education programs is well established and accepted as effective by both the armed services and Congress. The issue of retention has received much less attention.

The Montgomery GI Bill and the Army College Fund are the primary educational incentives aimed at recruitment. While these programs can be used by service members to

attend school on a part time basis while in service, they are seen primarily as post-service educational benefits (Fernandez, 1980). The primary education benefit used by service members while still in service is the Tuition Assistance (TA) program. A handful of studies have been done on in-service education benefits over the years (Githens et al., 1977; Alley et al., 1995; Green et al., 1988; Boesel et al., 1988). All but one of these studies focused exclusively on those military members using Tuition Assistance. All of these studies also addressed the issue of retention and participation in the off-duty education programs. The results of these studies are mixed, however. Of the five populations sampled in the four studies, only three showed a positive relationship between retention and off-duty education. Additionally, three of the studies are dated, only one addresses more than one service and all have significant methodological limitations.

The importance placed on retention as a goal of the military services and the less than exhaustive literature on the relationship between retention and participation in off-duty education makes it an attractive research target. A study of the relationship between participation in off-duty voluntary education and retention in the service would help fill a void in the literature and provide data for practitioners in the field.

Every study cited looks at the relationship of participation in educational programs and retention from a macro view. By that I mean that the relationship is explored from the point of view of the Department of Defense or service wide population. The Boesel and Johnson (1988) and Githens and Wilcove (1977) studies do control for a few

demographic factors in their analyses. Is it reasonable that within large populations educational programs have a constant effect on the propensity to reenlist?

When we talk about participation in voluntary education programs, we must take heed of the word "voluntary". Servicemembers who participate in these programs do so because they choose to. It seems reasonable that we must know something of why these servicemembers participate if we are to study the relationship between participation in the educational endeavor and reenlistment in the service, another voluntary activity. Certainly, the literature in adult education participation is a good starting point. The literature is well developed and significant in size. Even a casual reading of the literature on participation quickly points out that participation is not uniform throughout the adult population and the motives adults reveal for participating vary. This suggests that participation in off-duty education is not uniform across the service population and not all servicemembers have the same motivation for attending.

These factors allow us to refine the research problem so that we might examine not only the population as a whole, but sub-segments as well. Ideally, we would study all military members of the armed forces. Within this population are two major sub-groups, officers and enlisted. Officers, for want of a better analogy, are the management of the armed services. They receive a commission from the service and while they may have minimum service commitments for various reasons, serve on active duty until they resign or retire. Enlisted persons, on the other hand, are the workers and line supervisors. They enter into an enlistment contract with the service for a fixed amount of time, typically two

to six years. In most cases, the decision to remain in service or leave can only be made at the end of these contract periods. Another major difference between officers and enlisted personnel is in educational requirements. With a few exceptions, officers must hold a baccalaureate while enlisted personnel need only a high school diploma or GED. These differences both have a major effect on this proposed study. Because of the differences in education level upon entry, officer and enlisted personnel have largely different educational needs and desires. Additionally, officer promotions are very closely tied to education level. This means officers' educational participation is often motivated by career necessity. The differences between service commitment systems for officers and enlisted people make it difficult to operationalize retention in a way that is meaningful to both sub-groups. Studying the connection between voluntary education and retention for both sub-groups would require analogous but different methods. The enlisted population is the largest within the armed forces and the factors affecting enlisted and officer retention are significantly different. The large size of the enlisted population and the significant costs involved in its recruitment and training make enlisted retention a high interest item for the services. For these reasons this study will address the enlisted force exclusively.

CHAPTER II

THE RESEARCH QUESTION

Is participation is the Military Voluntary Education Programs positively related to enlisted retention in the armed services for some sub-groups?

Terms Defined

Voluntary Education Program: The collective name given to college programs targeted at military service members on active duty. These programs include on-base, after duty hours college programs provided by private and public institutions of higher learning as well as off-base programs at near-by institutions. Participation by the military member is voluntary and during their off-duty time. The military provides support through tuition assistance, in-service use of GI Bill education benefits and by providing administrative and logistical support to the students and institutions providing the programs.

Retention: The act of staying on active duty in the armed forces beyond the initial enlistment or commitment through voluntary reenlistment.

Sub-groups: Portions of the population under study that can be identified by unique demographic, situational or attitudinal characteristics.

Subsidiary Research Questions

Before we can attempt to answer the research question, we must first identify sub-groups within the population that might be positively influenced to stay in the service because of the voluntary education program. I propose a multi-faceted approach to this problem. First, the existing literature of military voluntary education and military retention suggests several sub-groups to examine. Secondly, the literature on adult education suggests other possible sub-groups. Third, anecdotal evidence from the researcher's several years in the field and contact with lifelong military educators suggests other possible sub-groups. And lastly, while testing for relationships between education program participation and retention in the sub-groups identified in methods one through three, quantitative and qualitative exploratory research can be carried out. This four facet approach generates the following additional research questions:

What are the characteristics of those who participate in the military voluntary education program?

Is the relationship between participation in the military voluntary education program and retention different for sub-groups, as suggested by the adult education literature and the subjective opinion of practitioners?

Do the patterns of the existing relationship between participation in the military voluntary education program and retention suggest sub-groups or differentiation not predicted in the literature?

If participation in military voluntary education programs and retention are related for sub-groups not suggested in the literature, what theory or mechanism is involved?

CHAPTER III

REVIEW OF THE LITERATURE

The literature in two different areas was reviewed: military voluntary education programs and adult education participation. Nearly all of the serious research in military recruitment and retention and much of the military voluntary education program is unpublished. The research, often performed under contract to the Department of Defense, must be found in internal reports that have limited readership. Once useful citations were identified, reprints of the reports were obtained with perseverance.

The literature on the history and evolution of the military voluntary education programs is quite prolific and complete. The historical foundations of the military's voluntary education program and the evolution of the program during World War II are thoroughly discussed in *The Armed Services and Adult Education* (Houle et al., 1947). Two doctoral dissertations also present much of the same information, but from slightly narrower perspectives. One documents the history of the Army program (Strehlow, 1967) while the other records the evolution of both Army and Air Force educational programs (Schwartz, 1963). Particularly valuable in both works are the appendices that include numerous early memoranda, letters and military orders that provide documentation of the official goals and intent of the education programs. An ERIC short paper titled *The Tuition Assistance Program in the Military* (Anderson, 1991) fills the evolutionary gap

from the sixties until the early nineties. These works combined with official documents from the services (OSD, 1994; War Department, 1947; War Department, 1948; HQ USAF., 1994; HQ DA., 1993) and Congressional documents (Congress of the U.S. 1982; Congress of the U.S. 1980; House Committee on Veteran's Affairs, 1984; Congress of the U.S. 1989; Congress of the U.S. 1983; Congress of the U.S. 1985; Congress of the U.S. 1986; U.S. Senate, 1954) provide a comprehensive picture of the outcomes desired from the military supported educational programs. As itemized above, the desired outcomes can be summarized as aiding recruitment and retention, improving job performance, preparing personnel for promotion or return to civilian life and lastly as providing a "useful" morale activity.

The literature on the effectiveness of the voluntary education programs in meeting their goals is extensive in some areas and nearly nonexistent in others. One area that has received significant attention is recruitment. Virtually all of this work was directed specifically at the effect of post-service type (GI Bill) educational incentives on recruitment. The excellent demographic breakdowns and attitudinal data contained in these studies allow many inferences about the recruitment aspects of educational programs in general. The data on recruitment are unanimous concerning educational benefits. Educational benefits are very positively correlated with recruitment of high quality personnel. This has been confirmed in several experimental studies of the recruiting effects of various educational benefit programs (Fernandez, 1980; Fernandez, 1982;

Buddin, 1991). Qualitative studies of the attitudes of active duty servicemembers confirm this conclusion (Boesel et al., 1983; Githens et al., 1977).

The area of retention is not so clear. The available literature reveals mixed conclusions. In a limited study of Navy voluntary education programs, participation was found to be negatively related to stated intentions to re-enlist and in actual reenlistments (Githens et al., 1977). A more recent survey of Air Force personnel (Alley et al., 1995) found that 72% of the respondents agreed or strongly agreed with the statement that the tuition assistance program improves the retention of quality personnel. Forty percent of those responding to the same survey stated that educational opportunities were a major reason they stayed in the military (Alley et al., 1995). While this study provides some evidence that Air Force personnel value educational programs highly, the sample used in the survey and the limited statistical analysis provided preclude any conclusions about the association between participation in off-duty education and retention.

A Navy study of Tuition Assistance (TA) users revealed that "Fifty-nine percent of TA users said that the availability of TA was an important factor in their decision to reenlist in the Navy. Thirty-nine percent of TA users said that the availability of TA was the deciding factor in their decision to reenlist in the Navy" (Green et al., 1988, p.25). Again, the sample is small and the sampling methods less than ideal. The study reported only the respondents' opinion of the importance of TA in their reenlistment decision. No data are provided on comparative reenlistment rates for TA users and non-users. All three of the previous studies dealt with only one service and only those servicemembers

participating in voluntary education programs while using tuition assistance. Those servicemembers paying out of their own pocket, using GI Bill benefits or other funding such as Pell grants, are not addressed.

The largest and most comprehensive study of participation in off-duty education was conducted in 1988, *The DOD Tuition Assistance Program: Participation and Outcomes* (Boesel et al., 1988). The primary focus of the study was users of Tuition Assistance. The study included Army, Air Force and Navy servicemembers. Survey data were combined with review of the individuals' military education records as well as selected personnel data from military computer records. The large sample size and multiple data sources makes this a particularly robust study. The study found a strong positive correlation between retention in the service and participation in the TA program (Boesel & Johnson. 1988). Two different measures were used.

One measure used survey data to compare TA users' and non-users' responses to a question about reenlistment intentions. Overall, TA non-users were nearly twice as likely to say they "plan to leave the military" (Boesel et al., 1988, p.36). The study did reveal large differences between services on this question, however. Army TA non-users were two and one-half times more likely to say they were leaving while the Navy respondents indicated almost no difference between users and non-users.

Another measure used in this study was a logistic regression analysis of several factors widely thought to be related to retention in the service, along with TA participation and actual retention data. The analysis revealed that "enlisted participation in

the Tuition Assistance program (TAPART) is strongly and significantly associated with retention after all the other variables in this analysis are taken into account." (Boesel et al., 1988, p.B-7) "Participating in Tuition Assistance roughly doubles the ratio of the probability of staying in the military to the probability of leaving" (Boesel et al., 1988, p.42).

Boesel and Johnson were not content, however, to end their analysis there. They also analyzed data from the National Longitudinal Survey of Youth Labor Market Experience. This is a widely used large scale longitudinal study. One of the questions this survey asks of those respondents in the military service is "During your service in the (Branch) did you take any courses for which you received high school or college credit" (Boesel et al., 1988, p.A-1)? Boesel and Johnson used a positive response to this question as a proxy for off-duty voluntary education participation. The relationship between intention to reenlist and participation in off-duty voluntary education was analyzed. The analysis found "in the NLS analysis there is no perceptible relationship between the reenlistment intentions of participants and non-participants in voluntary education" (Boesel et al., 1988, p. A-7). This is contrary to their finding with their own data. The authors attribute the differences to substantial differences in the sample in terms of time and composition. The analysis of the NLS data also showed significant differences in participation rates from the TA data that Boesel and Johnson gathered. My own suspicion is that the question on the NLS survey is not a good proxy for participation in off-duty education programs. The question does not ask about off-duty courses, only courses.

Additionally, it asks about high school or college credit. A service member who was enrolled in a military basic education or functional skills course during duty time could interpret this as high school credit as many go on to take the GED exam. Another ambiguous response could result from servicemembers who receive college credit from a military school or training course based on The American Council of Education's *Guide to the Evaluation of Educational Experiences in the Armed Services*. Most military schools and specialties merit a recommendation for college credit that is honored by many colleges and universities. Survey takers who responded yes to the question on courses for credit might have done so although they hadn't participated in off-duty voluntary education programs. If the servicemember's goal wasn't to obtain college credit it is possible that the construct being measured is different than that resulting from purposeful college participation.

None of the studies addresses the findings of the others. One possible explanation for the differences is the time of the studies. The Githens and Wilcove study was done in 1976 just as the service was making a transition to the All Volunteer Force. Many of those on active duty were levered into the Navy by the draft. Additionally, this period is marked by extreme difficulty in meeting recruiting goals, particularly among high quality recruits. These factors, along with the small population and the less than ideal sampling methods used by Githens may contribute to the differences. The Boesel and Johnson (1988) study which included all services except the Marine Corps, was based on 1985 data and used scientific sampling methods. The NLS data set not withstanding, this study

makes a compelling case for concluding that participation in off-duty education programs is positively related to service retention when other factors are controlled. The later Navy study by Green and Dunlap (1988) and the Air Force Study by Alley, et. al (1995) support a strong positive relationship between TA and retention, at least for those who participate.

Related studies done on the retention effect of post-service educational benefits (GI Bill) have generally found that those groups entitled to benefits re-enlist at lower rates than those who don't have benefits (Fernandez, 1980; Smith et al., 1990; Polich et al., 1982). This was attributed to the attractiveness of attending school full time by using the benefits .

The Boesel and Johnson (1988) study and to a lesser extent Githens and Wilcove (1977) are the only ones cited above that controlled for other factors associated with retention when looking at the relationship between retention and voluntary education participation. To provide insight of the factors effecting retention and as background to the question under study, a brief look at the literature on reenlistment and retention is warranted. Boesel and Johnson (1984) authored a comprehensive summation of various studies on service member retention. They break the factors into two groups, those dealing with pay, pecuniary factors, and those not pay related, non-pecuniary factors. According to their report, pecuniary factors are the most important determinants of reenlistment. Pay is important both for the first and subsequent reenlistments (Boesel & Johnson. 1984). Among non-pecuniary factors, job satisfaction and quality of life factors also are important in the second enlistment period and beyond. Higher education and test

scores are negatively related to reenlistment after the first term, but not beyond. Females and non-whites also appear more likely to reenlist after the first term although not all studies agreed on the differences between races.

Up to now we have addressed the issue of participation in off-duty education only as it relates to retention. We have not looked at participation in the off-duty education program itself. If we look at the literature on adult education participation, we find that not all adults participate equally. For example, studies continue to show that participation in adult education is highly correlated with education level. Those with the most education are the most likely to participate (Kwang et al., 1995). Participation rates for those with a high school diploma are thirty-one percent, while those with some college but no degree are fifty percent (Kwang et al., 1995). Why do adults participate? Virtually all of the literature shows that adults' number one motivation for participating in adult education is job related, followed by a desire for personal development (Kwang et al., 1995; Merriam, Ed. et al., 1989; Cross, 1981). Cross (1981) conceptualizes the adult motivation for education in terms of life transitions. When an adult is undergoing a transition (change of job, divorce, retirement, etc.) they seek education to assist them with that transition.

Participation is often addressed from the standpoint of barriers. What keeps people from participating? "The two most cited reasons for nonparticipation are lack of time and money" (Merriam, Ed. et al., 1989, p.87). Certainly, these are not the only barriers encountered. Personal problems, relevance of the education to the person's life, family and social group attitudes toward education and the availability of programs,

transportation and child care are all additional factors. Cross (1981) categorized barriers to participation as situational, institutional or dispositional dependent upon the origin of the barrier. Based on Darkenwald's and Valentine's (1985) six factor typology of deterrents to participation in adult education, Martindale and Drake (1989) performed a similar study on Air Force personnel. They concluded that the deterrents for the military sample were very similar to those identified by Darkenwald and Valentine in the civilian population. They refined Darkenwald's and Valentine's six factors and identified eight:

1. Lack of Course Relevance
2. Lack of Confidence
3. Cost
4. Time Constraints
5. Lack of Convenience
6. Lack of Interest
7. Family Problems
8. Lack of Encouragement

(Martindale et al., 1989, p.67)

The specific reason cited most often in this study fell under the lack of time factor and the second highest frequency went to lack of convenience.

The weight of the adult education literature suggests that there are demographic, personal, environmental and situational factors that influence participation in adult education activities. If that is the case, it is reasonable to assume that military service members vary in their attitudes toward adult education and their desire and ability to

participate. These differences, in turn, may be reflected in the relationship between participation in off-duty educational programs and service retention.

CHAPTER IV

METHODOLOGICAL APPROACH

Overview

With the exception of Boesel and Johnson (1988) nearly all of the research that has looked at participation in the military's voluntary education program used small samples from only one branch of the military services. Additionally, nearly all of the studies have only looked at service members using one funding source, Tuition Assistance. The overarching goal of the study reported herein is to take a close look at the question of how participation in the voluntary education program affects retention in the military services to provide information useful for administration of these programs. The current literature does not provide a solid base from which to build. For that reason, it is important to broaden the existing base from which additional research can be built. The desire is to answer the research questions posed from the widest perspective possible, which means a broad sample. As the resources available for the project are modest, existing data sources that might provide some of the information sought are very attractive.

In 1992 the Department of Defense, through the Defense Manpower Data Center (DMDC), conducted a survey of a large stratified sample of active duty service members and their spouses. One survey instrument was administered to enlisted personnel, another

survey to officers and a third to spouses of both. Each sub-group had approximately 20,000 respondents. The surveys contained approximately 150 questions, many with numerous parts. In all, each survey instrument had over 250 fields. These surveys contain detailed demographic data, questions on education participation, job satisfaction, civilian employment prospects, intention to reenlist, family composition, and recreational activities amongst others.

Several things make these data attractive. The sample is very large so that even small effects can be detected. All services are represented. The data set contains answers to questions about education participation and numerous factors that might be related. The data set is a newer version of the same survey data that Boesel and Johnson (1988) used for much of their analysis. A close approximation of some portions of their work could be replicated. The survey data set contains a 'couples' file that has matched responses of service members and their spouses. This allows exploring the relationship between education participation, retention and spousal attitudes toward the service and education. Lastly, and not insignificantly, DMDC released the data for this research.

The data set described above, hereafter to be called the DMDC data, could provide a great deal of information about the relationships that exist between participation in voluntary education programs, retention, and various other variables. Examination of these relationships would allow testing of sub-group behavior hypothesized from existing knowledge. Additionally, examination of relationships exhibited in the data set may, in turn, allow explanatory theory building. Any relationships discovered and theories build in

this manner are apt to be confounded by the complexity of factors that effect the human actors involved. For that reason, a second radically different methodology to answer part of the research question was proposed. Deciding which statistical relationships to test and then interpreting the results of those tests requires great insight of the scene under study. It is not reasonable to expect any one person to have the knowledge and experience necessary for the task.

To answer the exploratory questions posed by this project, a qualitative segment was integrated into the plan. After the initial statistical work was completed on the DMDC data, a series of semi-structured interviews (n=31) were conducted with voluntary education participants at Eielson AFB and Ft. Wainwright. A mix of Air Force and Army, women and men were interviewed. The focus of the interviews was to help provide insight to the possible meaning of the quantitative results of the initial investigation. While focused on some particular areas of interest, the interviews were open ended enough that other factors not suggested in the preliminary findings could and did emerge. While this sample is not large, it did allow us to look at two different services and several other sub-groups. Suggestions from the respondents or additional findings resulting from the interviews were then used not only as data points, but to formulate additional analysis of the original statistical data.

Quantitative Approach

Before discussing the analytical approach, a close look at the data is necessary. As already mentioned the Defense Manpower Data Center (DMDC) administered a large

scale survey. While three different survey instruments were developed, the survey instruments for enlisted and officer members were very similar, but differed somewhat to account for differences between officer and enlisted terminology. For example, a question might ask enlisted members whether they intended to reenlist while the officers would be asked if they intended to remain on active duty as they don't enlist for a fixed period as enlisted personnel do. The spouse survey instrument was different from the member instruments, but covered many similar aspects of military life from the perspective of the spouse. Including the subparts of multipart questions, each survey instrument contained over 250 different questions.

> The Officer Survey and the Enlisted Survey had nine sections: military information (i.e. , basic data), present and past locations, career intentions, individual and family characteristics, dependents, military compensation, benefits and programs, civilian labor force experience, family resources, and military life. .... The *1992 Department of Defense Survey of Military Spouses* questionnaire had eight sections: the military way of life, family military experience, Operations Desert Shield/Storm, family programs and services, spouse's demographic background, dependents, spouse's work experience , and attitudes towards the military way of life (Norris et al., 1997, p. 2-1).

DMDC distributed the Officer and Enlisted questionnaires to a stratified sample of active-duty service personnel.

> The sample was stratified by service (Army, Navy, Marine Corps and Air Force), status (Officer and Enlisted) and gender. A total of 5,000 members were sampled from each of the resulting 16 strata. These members had at least four months service, had not been sampled in the 1985 DMDC survey and were not enlisted

recruiters. If there were less than 5,000 in any cell, a census of that cell was taken (Norris et al., 1997, p.2-2).

Because some cells did not contain 5,000 members the total number sampled was 59,930.

In addition to these strata, three additional sub-populations were also sampled. A random sample (n=11,999) of members that had responded to a similar survey in 1985 and were still on active duty was called the Longitudinal Sample. A stratified sample of military recruiters (n=3,999) not surveyed in the 1985 survey was named the Enlisted Recruiter sample. The enlisted recruiter sample was stratified by service and gender resulting in eight cells. The size of each cell was 500. A stratified sample of National Guard and Reserve members serving on extended active duty was surveyed. This sample was stratified by the six service components (The four service reserves plus the Army and Air Force National Guards) and status (Officer or Enlisted). The cell size of the twelve resulting cells was 500. If a cell population was less than 500 the entire population was surveyed. The sample size of this subset was 5,484.

The spouse questionnaire was sent to the spouse of each sampled member who was married. "Specifically, if according to the Defense Enrollment Eligibility Reporting System (DEERS) a sampled member was married, his/her spouse was sent a spouse questionnaire" (Westat, 1993, p.4). The resultant spouse sample size that resulted from the four sub-sets detailed above was 24,165.

Response rates varied within each cell and sub-sample with the overall response rate at 65%. Each of the sample subsets was 'weighted' to adjust for several biases. Because most of the samples were stratified, weighing factors were applied to the strata to

correct for actual population ratios. A second correction was applied to adjust for nonresponse based upon the response rate within various cells. The weighting assumed that respondents and non-respondents were from the same population. A third correction called raking was applied to "reduce mean square errors and to compensate for any undercoverage resulting from incomplete frames" (Westat, 1993, p. 5). The three weighting factors were combined into a single weight adjustment and became part of each observation. A similar process was applied to the spouse data and a weighting factor computed for each observation. A complete discussion of the weighting procedure and the rationale for each component is contained in the report titled *Data Weighting Report* (Westat, 1993).

The relative merits of the weighting techniques used is beyond the scope of this research and the expertise of the author. The weighting factors provided with the data set were used for the analysis on the recommendation of the data producers. While the weighting techniques applied may produce biases of their own, their use provides population estimates that are much better than the raw data and were judged accurate enough for the analysis undertaken.

Two different SAS data files were obtained from DMDC, the Member data set and the Couples data set. The Member data set contains 59,930 observations, 27,684 from officers and 32,246 from enlisted members. This data set contained the responses from all the member sub-samples detailed above. The Couples data set was composed of the

combined responses from military service members and their spouses and contained 18,130 merged observations of which 7,702 were from enlisted members.

All of the statistical analysis was performed using SAS/STAT software. SAS/STAT was chosen for several reasons. It is an extremely powerful software package that is suitable for very complex statistical analysis (Spector, 1993). Because of the large size of the datasets to be analyzed, use of a large fast computer was desirable. The computer available to the author, a Digital Alpha A7640, was running Digital UNIX and SAS/STAT software. The last reason for using SAS/STAT was the availability of the DMDC data as a SAS data file. Using a SAS file precluded having to do significant data formatting and coding before analysis.

The central focus of this study is to examine the relationship between participation in off-duty voluntary education programs and retention in the armed services. Ideally, a long term longitudinal study would be used to determine service retention. In fact, the largest previous study of retention and education participation used just such a method (Boesel et al., 1988). Such a study was, however, beyond the time or resources available for this research.

The DMDC datasets do contain a decent measure of retention, however. Previous studies (Chow et al., 1980) have shown that intention to reenlist is a good predictor of actual reenlistment behavior. One of the DMDC survey questions asked the respondents to rate the probability that they would reenlist. The responses available ranged from "(0 in 10) No chance " to " (10 in 10) Certain " in one tenth steps (DOD, 1991b, p.7).

Additionally, there were two other fields that the respondents could choose: "Does not apply, I plan to retire" and "Does not apply, I plan to leave the Service" (DOD, 1991b, p.7). So that the responses from this question could be used as a measure of intent to reenlist the answers were rescaled to a new variable 'REUP' on an ordinal scale of 0 to 10 with 0 representing 0% chance of reenlisting, 1 representing 10%, etc., up to 10 representing a 100% chance of reenlisting. Observations that contained the 'Does not apply, I plan to leave the Service' response were recoded 0 for 0% chance of reenlisting. Observations that contained the 'Does not apply, I plan to retire' response were deleted based on the premise that the reenlistment decision and retirement are significantly different events and measure different constructs. While many retirement eligible service members have some discretion as when to retire, the window is relatively narrow being dependent upon how long they have been in the service and their present pay grade.

Another important variable was needed to perform the desired analyses, a measure of participation in off-duty education. The DMDC data sets did contain a direct measure of participation. One of the survey questions asked, "During 1991 did you attend a civilian school" (DOD, 1991b, p.8)? Respondents who answered 'yes' were given three answers to choose from depending upon the source of their funding for school. Those who chose 'no' were given four choices as to why they didn't attend. As this question only addressed education participation during the previous year it was labeled short-term participation and coded as the zero/one variable SHRTPART.

Military assignments vary considerably from job-to-job and location-to-location. Some jobs might require long duty hours and frequent travel while others are less demanding. Likewise, some duty stations offer a multitude of educational opportunities because of their size or geographic location while others have scant educational offerings. For these, as well as personal reasons, an individual service member's participation in off-duty education can vary considerably over the period of a military career. With this in mind, a measure of long-term participation in off-duty education would be more appropriate for some of the analyses desired.

Unfortunately, the DMDC survey did not provide a direct measure of long-term participation. Several questions on the survey did provide information about the respondents' educational attainment. Of particular note are questions asking about education level at the time the respondent first entered the service and another question that asked for the same information at the time that the survey was completed. The available answers ranged from no high school diploma to doctoral degree. Because these various levels are so important to the subsequent analysis, all of the available choices are detailed in table 1.

The objective was to find some measure of long-term participation in off-duty education. While neither of the questions on education level directly measured participation in educational activities, any increase in education level between the time of initial entry into the service and the time when the survey was completed would certainly be an indicator of participation. The survey responses to both questions about education

level were recoded to group all levels below 'some college' together. Observations that contained the 'Other degree not listed above' were discarded as there was no way to establish a relative education level in relation to the other responses. Two new variables were created (START) and (END) which indicated education level at service entrance and when the survey was completed (see appendix A).

Table 1

Possible Responses to Education Level Questions

From DMDC Question	Recoded for START and END
Less than 12 years of school (no diploma)	No College
GED or other HS equivalency certificate	No College
High School Diploma	No College
Some College, but did not graduate	Some College
2-Year College Degree	AA
4-Year College Degree (BA/BS)	BA/BS
Some Graduate School	Some Grad
Master's degree (MA/MS)	MA/MS
Doctoral degree (PhD/MD/LLB)	PhD/MD/LLB
Other degree not listed above	Omitted

A new variable called LONGPART was created based on the responses to the questions about education level at entry (START) and at present (END). If the respondent showed an increase in education level and the ending level was at least 'some college', long-term participation (LONGPART) was coded 1. If the end education level was below 'some college' or the same as at entrance LONGPART was coded 0. This

definition of long-term participation certainly is not a perfect one. To be counted as participating, a service member must not only participate in off-duty education, but also raise his or her education level. For those with no college or a baccalaureate, but no graduate work, completion of only one class would qualify as participation, as their education level would be raised from 'high school diploma' to 'some college' or from '4 year college degree' to 'some graduate school'. At the other end of the spectrum are those with only 1 undergraduate or graduate course who would have to complete an entire degree program to be counted as participants. Another limitation exists with this definition. Many military technical schools and certain types of military training can result in the award of college credit. This can happen in several ways. Some colleges grant credit for experiential learning based on a student's military experience. Many colleges award transfer credit for military training that has been evaluated for college level equivalency by the American Council on Education. Some military schools are accredited by a regional accrediting body and award college credit as does any other accredited institution. The most notable of these are US Air Force technical and professional training courses that are under the institutional umbrella of the Community College of the Air Force.

Previous studies of the relationship between off-duty education and retention have used definitions of participation that typically required minimal levels of participation. For example, use of Tuition Assistance for even one class or the signing of a contract for degree without actually taking a course has been counted as participation (Boesel et al.,

1988; Bunde et al., 1981; Githens et al., 1977; Alley et al., 1995; Green et al., 1988). The time periods under study have also varied from study to study. Some have looked at participation over a short period (Bunde et al., 1981; Githens et al., 1977; Green et al., 1988) others the entire military career (Alley et al., 1995) and still others at both long and short-term participation (Boesel et al., 1988).

The measure of long-term participation provided by the variable LONGPART is no less selective than the measures used in previous studies and in some cases, particularly those with some college, more restrictive. That is, to be counted as a participant would require a significantly greater involvement in off-duty education. As the purpose of the study is to look at the relationship between participation and retention, a more restrictive definition of participation would tend to lend credibility to any education participation effects that are supported by the data. The other issue to be considered is the ability to obtain college credit through non-traditional means that don't require participation in off-duty education. Two factors come to mind when trying to estimate the effect that this situation may have on the outcome of the data analysis. First, for a military member to receive college credit from an institution of higher learning they usually must request a formal evaluation of their military experience and training. Many schools will not perform this evaluation until a student is fully matriculated having completed a minimum number of credits with the school. In other cases, the school will do an evaluation upon payment of a fee. In either case, military members must have a desire to formalize their college level credentials if they undergo this process and thus have made a clear statement about their

desire for college level educational attainment. The possible exception to this might be US Air Force members who obtain credit through the Community College of the Air Force (CCAF). Because the technical schools Air Force members attend are accredited, they earn college credit directly. When the survey was performed, enrollment in CCAF took positive action on the part of the service member and thus, once again they clearly made a statement about their desire to participate in a college level program. Additionally, attainment of an associate's degree from the CCAF requires that a service member complete a significant number of general education requirements such as English composition, math, science, humanities, etc. These courses are not available through military training courses and thus must be completed through off-duty participation. Even with the limitations already noted, the variable LONGPART would seem to measure a construct that shows a commitment to higher education attainment.

With some of the key variables defined, initial analysis was performed using the regression technique on very simple bivariate models. The primary reason for performing the analysis in this manner was to gain experience in the use of the SAS/STAT software and to explore the numerous variables available in the data sets. The results of the early analyses were encouraging. Long-term participation was strongly ($p=0.0001$) and positively associated with intent to reenlist, accounting for over three percent ($R^2=.0334$) of the variation in the dependent variable (intent to reenlist). Continuing with simple models, many of the subgroup relationships were also tested with mixed results. Based on the existing literature, several factors were thought to be related to reenlistment and hence

intent to reenlist. For the relationship between participation in off-duty education and retention in the service to be meaningful, the effect of other known effects would have to be controlled. This obviously requires more complex models. Replicating the Boesel and Johnson (1988) model as closely as possible was chosen as a desirable starting point for testing the complex models. In addition to controlling the model for several factors thought to be related to service retention, this model would allow the DMDC data to be benchmarked against the Boesel and Johnson data.

The Boesel and Johnson study (1988) explored the relationship between participation in voluntary education programs and retention while controlling for several other factors thought to be related to retention. Those factors are listed in table 2. Most of the same factors are available in the DMDC data set. The exceptions are Tuition Assistance participation, time-in-grade, AFQT category and actual retention data. Lack of these variables precluded duplicating the test done by Boesel and Johnson .

The DMDC study does contain proxies for three of the variables, however. Rather than participation in Tuition Assistance we can look at participation in off-duty education programs in general. Two methods are available. The short-term participation (SHRTPART) or long-term participation (LONGPART) variables already discussed. The (LONGPART) variable most closely matches Boesel and Johnson's (1988) (TAPART) as both count participation at any point in the servicemember's career. The primary difference is that (TAPART) only captures participation through one funding source,

Tuition Assistance, while (LONGPART) captures participation regardless of funding source.

AFQT score, one of the variables not available in the DMDC data set, is a general measure of verbal and math aptitude. Education level may serve as a crude proxy for AFQT score. In the Boesel and Johnson study (1988), education level was not significantly related to retention when controlling for AFQT. They suggest that both may measure the same construct. "It may be that AFQT scores capture educational differences as well as differences in aptitude among enlisted members, so that controlling for AFQT leaves nothing for education level to 'explain' " (Boesel et al., 1988, B-8). An even better proxy might be education level at the time of entering the service (START) which would align the time frame with the taking of the AFQT. The (START) variable was chosen as the closest proxy for AFQT score.

The other variable used by Boesel and Johnson (1988) that is not available in the DMDC data is time-in-grade, how long the service member has been in his or her present pay grade. The labor market model they used hypothesized that time-in-grade would be negatively related to retention because it indicated a longer period without promotion. Their data supported this relationship for officers. The effect was just the opposite for the enlisted members. Longer time-in-grade was associated with better retention. They could offer no explanation for this difference. I believe their model is sound, but their reasoning flawed. Time-in-grade is a significant factor in enlisted promotions. Time in grade is weighed as a positive factor in the enlisted promotion system. The more the better. High

time-in-grade means you're closer to your next promotion, not further from your last. Officer promotions are significantly different. The officer promotion system has officers compete for promotion with others in their year group cohort. Time-in-grade is not a significant factor. Those with very high time-in-grade have likely been passed over for promotion and won't be promoted again. Unfortunately, the DMDC data does not contain any proxy for time-in-grade.

The last and very important variable missing from the DMDC data is actual retention data. Obtaining this data would require a longitudinal component of the study similar to that used by Boesel and Johnson (1988). Intent to remain in the service is a widely accepted measure of actual retention that has been shown to be valid in numerous studies (Boesel & Johnson. 1984) and is available in the DMDC data set, but for enlisted personnel only.

A regression using the SAS stepwise selection option (p=.15) was planned for the member data set with intent to reenlist (REUP) as the dependent variable and the 13 variables detailed in table 2 as independent variables. To most closely replicate the Boesel and Johnson (1988) model, responses from Marines were excluded from the data. The stepwise option provided the advantage of eliminating from the final model those variables that were not statistically significant at p=.15 or less.

The literature on military service retention suggests there are several other variables that may be related to retention that Boesel and Johnson didn't include in their logistic regression analysis. Conspicuous by their absence are job satisfaction and quality

of life factors. This is particularly puzzling given that Boesel and Johnson's own study of reenlistment (Boesel et al., 1984) found these factors significant in the reenlistment decision. The DMDC data contains several questions about job satisfaction and satisfaction with quality of life. Questions that asked the respondents to rate their overall

Table 2

Variables used in Boesel and Johnson and DMDC Regressions

Factors Available	Boesel & Johnson	DMDC Data	Type Variable
Long-term participation in off-duty education *	TAPART	LONGPART	Dummy
Retention in service or intent to remain *	ACTIVE	REUP	Contin
Sex	SEX	MALE	Dummy
Black	BLACK	BLACK	Dummy
White	WHITE	WHITE	Dummy
Marital Status	MARR	MARR	Dummy
General Mental Aptitude at Service Entrance *	CAT1-2 & CAT3***	START	Contin
Education Level	ED	END	Contin
Army	ARMY	ARMY	Dummy
Navy	NAVY	NAVY	Dummy
Military Pay Grade (rank)	PGRADE	PGRADE	Contin
Total Active Military Service Time	TAFMS	TAFMS	Contin
Time in present grade **	TIMEGRDE	N/A	Contin
Enlistment period (1,2,3, etc.)	ENLPER	ENLPER	Contin
Time left in current enlistment	TIMELFT	TIMELFT	Contin

Note: * Indicates a proxy variable that is different between the two tests.
** Variable not available or proxied in one data set.
*** CAT1-2 & CAT3 are Dummy variables

satisfaction with their jobs and with the military way of life were selected. Both of these responses were rated on a Likert scale, job satisfaction on a five point scale and satisfaction with the military way of life on a seven point scale. The responses were coded

from -2 or -3, very dissatisfied to +2 or +3, very satisfied and named JOBSAT and MILSAT respectively.

Another factor cited in the employment market models of reenlistment is the ability of the service member to get a good job in the civilian sector (Boesel et al., 1984). Again, the DMDC data set contained a decent measure of a service member's perception of his or her ability to get a good job outside of the service. Respondents were asked to rate, on a ten point scale ranging from 0 to 10, the probability that they could get a good civilian job if they left the service This response was scaled and labeled as the variable job chances (JOBCH).

To provide a more complete model, a second stepwise regression analysis was performed using the variables listed above from the Boesel and Johnson replication attempt, plus the additional variables job satisfaction (JOBSAT), satisfaction with quality of military life (MILSAT) and the chances of getting a good civilian job (JOBCH). For this model the observations from the Marine respondents were returned to the data. It was hoped that this more complex model would have considerably more explanatory power. In addition to the three variables above that were suggested by the literature on reenlistment, one other variable was added to this more complex model. That variable provided a measure of short-term participation in off-duty education. This dummy coded variable (SHRTPART) indicated whether the respondent had attended a civilian college during the previous year. The objective of adding this variable to the model was to explore whether there were any differences in the effect upon retention between short and

long-term education participation. As this model would serve as the basis for several additional tests, hereafter it will be referred to as the Complex Model.

Several hypotheses concerning sub-group relationships between retention and participation have been suggested by the literature and the judgment of practitioners. Several testable hypotheses were developed concerning these sub-groups. Perhaps the connection between education participation and retention was more robust for some sub-groups than the entire population sample. Tests were formulated to look at education participation and retention among several sub-groups suggested by the literature. The hypothesis, underlying theory and the operationalized tests are summarized below:

1. The retention rates are higher for more highly educated servicemembers if they participate in the voluntary education program.

Theory: The adult education literature is unambiguous concerning the correlation between education level and participation in additional education (Merriam et al., 1991; Kwang et al., 1995). This relationship seems to remain true for service members as well (Boesel et al., 1984; Boesel et al., 1988). If those with higher education levels value additional education more than those with less education, it is likely that participation in the voluntary education program is a stronger retention enticement for those with higher education levels. If the service can meet their needs for additional education, they are more likely to stay.

Operationalization: Regression analyses were performed using the Complex Model and the additional variables created by the product of education level, both at

entrance and at time of the survey, and the dummy variables for long-term education participation. Two new variables were created as detailed in table 3.

2. *The effect of participation in voluntary education on retention rates of those enlisted members with some college but no degree will be greater than for those with no college or a baccalaureate.*

Theory: Previous studies of Tuition Assistance participation have shown the highest usage by those with some college and no degree (Githens et al., 1977). This is consistent with expected behavior. As already mentioned, adult education rates are typically higher among those with a higher education level. A moderating factor exists, however. Within the military system, enlisted personnel with a baccalaureate are in a very distinct minority. Education beyond this level provides little utility in terms of career progression. The literature shows that most adult education participation is job or career related (Kwang et al., 1995; Cross, 1981). If education beyond the bachelor's degree is not valuable for a person's career, it is likely to be valued less than education which is career relevant and thus will have a lower influence on the reenlistment decision.

Operationalization: Using Analysis of Covariance ANCOVA (General Linear Model) the mean retention rates (REUP) were compared between participants and non-participants for different education levels, both at the time of entrance into the service and at the time the survey was completed. The interaction of the start level and LONGPART and end level and LONGPART were also added as a variable in the model while controlling for all the factors from the Complex Model.

Table 3

Interaction of Education Level and Education Participation

Variables used in creating new variable	New Variable
LONGPART*START	LONGSTRT
LONGPART*END	LONGEND

3. Retention rates are higher among those who want to participate in off-duty education even if they don't participate.

Theory: During the researcher's 23 years of active military service he encountered much anecdotal evidence that servicemembers intended to pursue higher education at some point in the future. Work or family situations prevent participation at a particular time, but the educational opportunities play a role in the service member's long range plans.

Operationalization: A regression analysis was performed using the Complex Model and the additional dummy variable EDWANT. This variable was derived from the response to a question about participation in off-duty education during the previous year. If the respondent indicted that he had participated in off-duty education or wanted to but could not because of a conflict of some type, EDWANT was coded 1. If the respondent indicted that she didn't participate because she wasn't interested, EDWANT was coded 0.

4. Among servicemembers with a similar education level, those who participate or want to participate in the voluntary education program are more likely to stay in the service than those not interested in the program.

Theory: The adult education literature shows a strong relationship between education level and the desire for further education (Kwang et al., 1995). Those with the most education seem to value even more education. Within a particular education level, those who value the voluntary education program are more likely to view a military career favorably than those who are not interested in further education.

Operationalization: Using Analysis of Covariance ANCOVA (General Linear Model) the mean ratings of intention to reenlist (REUP) were compared between those who participated or expressed a desire to participate in off-duty education (EDWANT=1) with those who weren't interested in off-duty education (EDWANT=0). A separate analysis was performed for each sub-group defined by the education level at the time the survey was conducted (END) while controlling for the factors from the Complex Model.

5. Among those who report low job satisfaction, retention rates are higher for those who participate in adult education.

Theory: Previous studies of retention have shown a strong connection between job satisfaction and service retention, particularly in the second enlistment and beyond (Boesel & Johnson. 1984). Strong anecdotal evidence exists that suggests some service members use educational participation as a substitute for job satisfaction. This connection is even recognized by the US Air Force which provided a special Tuition Assistance rate to missile launch officers (a job with low satisfaction) as a morale and retention measure. The literature on organizational behavior seems to support this premise. Presthus, describing the actions of dissatisfied workers, whom he termed 'indifferents' within a

bureaucratic system stated, "The indifferent thus tends to find his real satisfactions in extravocational activities" (Presthus, 1962, p.225). If service members are experiencing low job satisfaction in a particular job, yet receive personal satisfaction from the education activities, their participation and retention rate should be positively effected. This may be particularly true if the service member remains happy with the military way of life, despite dissatisfaction with a particular job which is viewed as temporary. As military assignments are often for a relatively short, fixed period of time, this is quite plausible.

Operationalization: A regression analysis was performed using the Complex Model and an additional variable created by the product of job satisfaction (JOBSAT) and the dummy variable for long-term education participation (LONGPART). This new variable was named SATPART.

6. Participation in the voluntary education program for those who report low job satisfaction increases satisfaction with the military way of life compared to those who are dissatisfied with their job who cannot participate in the voluntary education program.

Theory: Those dissatisfied with their military job who find personal satisfaction through participation in the voluntary education program should be more satisfied with the military way of life than those who don't have the substitute outlet for satisfaction. As the military provides the alternative educational activity, the participant's satisfaction with the military overall should increase. Those who are dissatisfied with their job and participate in off-duty education should show higher satisfaction levels for the military way of life in

general because the educational experience provided a desirable substitute avenue to personal satisfaction.

Operationalization: Using Analysis of Covariance ANCOVA (General Linear Model) the mean ratings of satisfaction with the military way of life (MILSAT) were compared between education participants and non-participants and for those who did and did not report low job satisfaction. Low job satisfaction was defined as answering 'Neither satisfied nor dissatisfied ', Dissatisfied', or 'Very dissatisfied' to the question on overall job satisfaction. The resultant dummy variable was labeled (LOWSAT). The interaction between low job satisfaction (LOWSAT) and long-term participation in education (LONGPART) was also analyzed. All the factors from the Complex Model were controlled for.

7. A military member's satisfaction with his or her opportunities for education and training effects that member's overall satisfaction with the military way of life.

Theory: If education and training are significant personal development goals, a person's satisfaction with the opportunities the military affords to meet those goals will effect how satisfied they are with the military way of life overall.

Operationalization: The DMDC data set has 14 factors associated with military life, one of which is satisfaction with education and training opportunities. The effect upon overall satisfaction with the military way of life of each of these 14 factors was analyzed using multiple regression techniques. Each factor was rated by the respondent on a five point Likert scale. For analysis each factor was recoded from -2 to +2 with the

positive numbers indicating satisfaction and the negatives dissatisfaction. The dependent variable (MILSAT) was an overall rating of satisfaction with the military way of life that the respondents rated on a 7 point Likert scale. This variable was rescaled on a plus and minus basis in a similar fashion. This recoding allowed a common crossing point for all these factors with zero indicating neither satisfaction nor dissatisfaction.

The Couples data set allowed us the opportunity to look at the interrelationship between service retention and other factors associated with the military for both the military members and their spouses. One factor that is available in the DMDC data set is the spouse's support for reenlistment. The premise that the spouse's support for reenlistment would have an effect on the service member's decision has face validity. Indeed, there is some support in the literature on service retention that the spouse's opinion has significant influence on the military member's commitment to a military career. Orthner (1980) cited in August (1994) found spouse support to be the single best predictor of retention.

The concept that the spouses most satisfied with the military way of life are most likely to support the member staying in the service also seems to ring true. The spouses of military members value education at varying levels, just as military members do. The educational opportunities, or lack there of, presented by a military life style effect the couple collectively. If either or both spouses are receiving satisfaction from educational participation, the couple's propensity to stay in the military should be higher. On the other hand, if one or both of the couple are not happy with the educational opportunities, the

couple's propensity to reenlist may decrease. Taken together this suggests that there is a relationship between educational participation by a service member and or his/her spouse's satisfaction with educational opportunities, spousal support for reenlistment and intent to reenlist. The following testable hypotheses for the Couples data set were developed from the aforementioned assumptions.

1. *Military members whose spouses support their staying in the service are more likely to intend to stay in the service.*

Operationalization: A regression analyses was performed using the Complex Model minus the (MARR) variable and the additional variable (SPSUPPT) which is a measure of overall support for reenlistment coded on a -2 to +2 scale. This variable was derived from the spouse's response to the question "At the present time, do you want your spouse to stay in the Service at the end of his/her current obligation" (DOD, 1991a, p.6).

2. The following hypotheses all relate to factors that may be related to the level of support (SPSUPPT) spouses show for the member remaining in the service:

a. The spouses who are most satisfied with the military way of life are more likely to support the military member remaining in the service.

b. There is a positive relationship between the quality of the educational opportunities available for the military spouse and the spouse's support of the member staying in the service.

c. The spouse of a service member who participates in the voluntary education program is more supportive of that member staying in the service.

d. Spouses who participate in education are more likely to support the service member's staying in the service.

Operationalization: The DMDC data provides information on member and spouse participation in educational programs. It also provides a measure of the spouse's support for staying in the service, spouse's opinion of the quality of his or her educational opportunities and the spouse's overall satisfaction with the military way of life. The individual hypotheses listed above can be tested using these measures in a multiple regression using these factors as dependent variables and overall spouse support for reenlistment (SPSUPPT) as the dependent variable.

3. A spouse's satisfaction with his or her opportunities for education and training effects that spouse's overall satisfaction with the military way of life.

Theory: If education and training are significant personal development goals, a person's satisfaction with the opportunities the military affords to meet those goals will effect how satisfied they are with the military way of life overall.

Operationalization: The DMDC data set has 30 factors associated with military life, one of which is satisfaction with education and training opportunities. The effect upon overall satisfaction with the military way of life of each of these 30 factors will be analyzed using multiple regression techniques.

In addition to the hypothesis testing detailed above, other statistical tools where used with the DMDC data. Several simple descriptive statistics were also planned for the data. The frequency distribution of several variables tells us quite a bit about the

population and sub-populations under study. Additionally, by using several demographic variables, both continuous and dummy coded, in a logistic regression we could build profiles of sub-groups such as long-term participants in off-duty education. Several of these measures were planned and made.

Qualitative Approach

As we have already mentioned, in addition to the quantitative analysis detailed above, a qualitative component was planned for this study nearly from its inception. With any complex human behavior, such as the decision to reenlist, there are always variables too numerous to identify and measure. Even the best quantitative models provide limited insight of the phenomena under study. To help make meaning of the statistical results derived from the first part of this study, a number of interviews were planned with military members engaged in off-duty education. The goal of those interviews was to ascertain the attitudes that military students hold about participation in off-duty education. The sample proposed to be interviewed would be small and thus extreme care must be exercised not to generalize the results too widely. This limitation not withstanding, the existence of significant themes within even a small sample could help explain the quantitative results. When the results of the initial quantitative analysis proved unexpected and quite puzzling the importance of the qualitative thread was magnified significantly. Given that there is little literature on the connection between off-duty education and retention and none what

so ever that provides a specific theoretical perspective of the education and retention relationship in a military setting, these interviews offered the possibility of being particularly fruitful.

All the people selected for the interviews were active duty military members who are currently involved in off-duty voluntary education. The interviewees were selected from participants of college programs on one Air Force and one Army installation. An attempt was made to interview a diverse group in terms of race and ethnicity, sex, military grade and education level. Table 4 contains a breakdown of selected demographics of the interviewees. Many of those interviewed were students who were referred by academic advisors from different institutions. I told each interviewee I was researching the connection between off-duty education participation and retention and that the purpose of the interview was to obtain their views and attitudes about off-duty education and military service.

A series of questions (see appendix B) was put to each student and additional follow-up questions were used to explore particularly interesting responses. The interviews were tape recorded and varied in length from approximately 13 minutes to 44 minutes with the average interview lasting approximately 26 minutes. All of the interviews were conducted over a four week period in the Spring of 1997.

During the interviews, notes were taken of particularly interesting responses. After all of the interviews had been completed, all tapes were reviewed end-to-end and additional notes were taken that pointed to emerging themes. During this review of the

taping I discovered one interview tape was blank. Whether this omission was from operator error or mechanical malfunction could not be determined. The notes from the initial interview were available and as no record of the identity of the interviewees was maintained outside of his or her demographic profile, no attempt was made to reinterview the subject. When all the tapes had been reviewed, a list of themes that had emerged was developed. With this list in hand, the tapes were reviewed a second time and portions of the interviews that illustrated these themes were excerpted and transcribed.

Table 4

Demographics of Students Interviewed

Service	Sex	Race/Ethnicity	Pay Grade	Time in Service
Army - **15**	Female - **7**	Other - **5**	E3/E4 - **10**	< 4 years: **6**
Air Force - **16**	Male - **24**	Black - **6**	E5/E6 - **12**	4-8 years: **8**
		White - **20**	E7 - **5**	9-12 years: **6**
			E8/E9 - **4**	13-16 years: **3**
				>16 years: **8**

Before the interviews were conducted the decision was taken to only interview service members who were involved in off-duty education and thus to omit those who were not participating. There were two reasons for this approach. The purpose of the study was to examine the relationship between participation in off-duty education and retention in the military service. Specifically, the interviews were undertaken for the express purpose of trying to understand the service person's attitudes and beliefs about participation in off-duty education. The focus of the research was on participation and

retention rather than barriers to participation or reasons for non-participation. While there is no denying that interviewing non-participants might yield clues to the prevailing service attitudes, I reasoned that more information about the reasons for and attitudes toward off-duty education could be gathered from participants given the small sample size attempted.

The other factor favoring this sampling method resulted from the early quantitative analysis undertaken for this project. The analysis of the DMDC data set revealed that dependent upon service affiliation, eight to twenty-eight percent of enlisted personnel participated in off-duty education during the one year period prior to the survey. Further analysis also showed that the participation rate was fairly uniform across pay grades and enlistment periods. Long-term participation, that is participation some time during the service member's career resulting in an increase in education level, rose steadily with pay grade and enlistment period. This strongly suggested that participation in off-duty education was not constant for all personnel, but rather was an on and off activity.

This was congruent with my own military experience that educational opportunities varied from time to time and station to station based on work assignments and geographical location. Stated another way, the longer someone was in the military or the higher they rose in rank, the more likely they had participated in off-duty education. When that participation took place in terms of the individuals career varied. At least for the Army and Air Force, the two services that would be interviewed, virtually every service member who advanced to the top of the enlisted career ladder, 89.58% in the

Army and 90.6% in the Air Force, had participated in off-duty education. In short, today's non-participant was likely to have participated in the past or would in the future.

CHAPTER V

RESULTS AND DISCUSSION

Overview

Before beginning a detailed discussion of the results of the research an overview of the key findings is provided to guide the reader.

The quantitative data supported the position that participation in off-duty education is positively related to retention in simple bi-variate models. Some of the sub-group relationships hypothesized were supported by the data. Specifically, the desire to participate in education had a positive effect upon enlisted retention for those who wanted to participate in off-duty education even if they didn't participate. The participation effect was greater for those reporting low job satisfaction. The satisfaction of both service member and spouse with their educational opportunities was positively related to their overall satisfaction with the military way of life.

However, when more complex models were tested that controlled for other factors thought to be related to reenlistment, the education participation effect virtually disappeared. This is a major shift in the importance of the education effect from a previous comprehensive study (Boesel et al., 1988). Additionally, education participation patterns exhibited large shifts from previous data suggesting a fundamental change in the relationship between educational participation and military service.

The qualitative data support three significant findings. The military places a high value on education. This is exhibited in policies, reward systems, promotions and the attitudes of those in the military. Opportunities to participate in off-duty education are not constant throughout a servicemember's career but vary dependent upon location, job and military specialty. Lastly, many servicemembers experience an evolution in their attitude toward off-duty education. They begin because of some external pressure and seem to develop a love for the process of education as they continue to participate.

Quantitative

As previously mentioned, the quantitative work began with the testing of rather simple models using intent to reenlist (REUP) as the dependent variable and several different measures of education participation as the independent variables. The early results were encouraging. When long-term participation was defined as a change of education level while in the service that resulted in an end level of at least some college, (LONGPART) participation was strongly ($p=.0001$) and positively related to intent to reenlist, accounting for three percent ($R^2=.03$) of the variation in intent to reenlist. As the recoding of other variables progressed, other simple models were also tested with mixed results.

A cautionary note is warranted concerning statistically significant effects found in the data analysis. The Member data set used for the complex models contained very large numbers of observations. While the actual number depended upon the specific variables

contained in the model, most tests used 20,000 observations or more (n>20,000). Likewise with the Couples dataset. This data set, while smaller, still contained in excess of 5000 observations (n>5,000). These large numbers allowed the measurement of very small effects. I have tried to separate the statistical significance of these effects from the practical significance of the effect as a predictive tool. Very small p-values indicate that there is a very small probability that the effect under test is a result of randomness in the data. Practical effect is better measured by the amount of variation (R^2) in the dependent variable explained by the independent variable. In layman's terms, the low p-value tells us that the effect is real, there are differences. While a very small R^2 tells us that the differences we have measured are of little useful importance.

The first complex model to be tested was the model used to replicate as closely as possible the Boesel and Johnson (1988) model. An ordinary least squares regression using the stepwise procedure was run using the variables listed in table 5 as independent variables and intent to reenlist (REUP) as the dependent variable. The results of the regression were largely the same as Boesel and Johnson with a couple of highly notable exceptions. Of the 13 variables (out of 14) that were duplicated or proxied, 10 were statistically significant in both models. Of these 10, all but 2 (Total Federal Active Military Service and Mental Category) had coefficients in the same direction and most were of similar magnitude in terms of relative effect upon the dependent variable reenlistment (see table 5).

Of the top four factors accounting for differences in reenlistment behavior in the Boesel and Johnson model, the DMDC data yielded 3 of the same factors in the same relative relationship. The very notable exception is participation in off-duty education. The Boesel study found that use of TA as a measure of participation in off-duty education accounted for more of the variation in reenlistment activity than any other factor in the model. The DMDC data gave much different results. While participation in off-duty education, measured by a change of education level to at least some college, is positively related to reenlistment at a significant level, p= .0001, the amount of variation that it accounts for when all other factors are in the model is very small, R^2=.0002. In other

Table 5

Comparison of Significant * Factors in
1985 & 1992 Models

DMDC Data 1992			Boesel and Johnson 1985		
Variable	Partial R^2	Coefficient	Variable	Odds Ratio	Coefficient
PGRADE	0.1719	Pos	TAPART	1.94	Pos
TIMELEFT	0.516	Pos	PGRADE	1.78	Pos
MARR	0.0134	Pos	TIMELFT	1.76	Pos
ARMY	0.0047	Neg	MARR	1.62	Pos
ENLPER	0.0022	Pos	ENLPER	1.36	Pos
BLACK	0.0006	Pos	SEX	1.12	Pos
TAFMS	0.0004	Pos	TIMEGRDE	1.01	Pos
LONGPART	0.0002	Pos	TAFMS	0.98	Neg
START	0.0002	Pos	CAT 1-2	0.89	Neg
END	0.0009	Neg	NAVY	0.78	Neg
NAVY	0.0001	Neg	WHITE	0.63	Neg
			ARMY	0.56	Neg

* p< .05

words, although the relationship between reenlistment intention and long-term education participation is statistically significant, it appears of to be of little practical significance. In the DMDC data, the first three factors accounted for 96.6% of the variation explained by the model.

Another factor that differs between the models is the effect of the respondent being in the Army. In the DMDC regression, ARMY is the fourth largest effect while it finished dead last in the Boesel and Johnson study. It should be noted, however, that in the DMDC data, while ARMY finished fourth in effect upon reenlistment, it only accounted for four tenths of one percent of the variation in reenlistment intention (R^2=.004). The congruence of the most important variables in the DMDC and Boesel and Johnson (1988) models provides support for the position that the model is a useful predictor of reenlistment activity.

The one factor that seems to behave most differently in the two models is long-term participation in off-duty education. One possibility that cannot be overlooked is the difference in the definition of participation used in the two models. Boesel and Johnson (1988) defined participation as the use of Tuition Assistance for one or more courses anytime during military service. The DMDC data model counts participation as a change in education level from entrance until 1992 (survey date) resulting in the attained education level reaching 'some college' or higher. There are two differences in the second definition. Foremost, the funding method used to take courses is not limited to TA. Boesel and Johnson estimate that use of Tuition Assistance accounted for only one half of

servicemember college enrollments at the time of their study. This issue is not as problematic as it appears. The choice of funding source for college attendance by service members is largely a function of what is available to and the out of pocket costs incurred by, the service member. The availability of funding sources is dependent upon several factors.

Tuition Assistance is normally available to most service members. I say normally because TA funding does run out in some services and at some installations on a recurring basis. This often means that restrictions on the number of classes taken or the dollar amount per class are levied on the service member or TA is not available at all for one or more school terms. In-service use of veteran's educational benefits is another option available to many. The amount and availability of these benefits vary widely depending upon the time of initial enlistment, the service, the military specialty in which the member enlisted , and whether the member elected to participate in those programs that required a contribution on the service member's part. Pell grants are another funding source for which many service members are eligible. The eligibility and amount of the Pell grant is a function of student status (full or one-half time), family income and family size. Some service members even receive full funding by the service for specific job related courses.

The service member often chooses which funding source to use based on minimizing their out-of-pocket expenses. This means that the best choice can change from semester to semester as benefit levels change, tuition charges vary, family incomes change and the number of classes they take increases or decreases. The result is that military

students often use various sources of funding. While over any given period of time TA may account for only a portion of the total enrollments, it is unlikely that the TA user population is very different for the military student population as a whole.

The second issue is the change in education level itself. If the service member enters the service showing 'some college' or higher as an education level, attainment of the next level of degree would be required to show a change of education level. This assuredly would require taking at least one college course and quite probably many more. If, on the other hand, the service member enters with no college, the education level of 'some college' might be obtained by a college granting college credit for military training or schooling. This effect would be limited by the number of schools that will evaluate non-traditional credit prior to matriculation. Additionally, it could be argued that the process of obtaining college credit for non-traditional learning exhibits a strong desire on the member's part to continue his or her postsecondary education.

While the effect of the differences in the definitions of the education participation variables between the DMDC and the Boesel and Johnson (1988) data could be debated, the argument centers on nuances of the measure not the construct being measured. The change in the relationship between participation in off-duty education and retention in the service in the two models is a profound one, well beyond minor differences in the method used to measure the construct. The question that remains is why has the importance of participation in off-duty education decreased in relation to reenlistment?

Before proceeding with the tests of the hypothesized differences between sub-groups, a more complex and complete model of differences in retention (REUP) was tested. As previously discussed, this model included other variables thought to be related to reenlistment, such as satisfaction with your job and the military way life as well as the prospects for employment in the civilian world. Indeed, when these factors were added to the model and a stepwise regression performed the model had significantly more predictive power. While the replicate of the Boesel and Johnson (1988) model accounted for approximately 25% of the variation in intent to reenlist (adjusted $R^2 = .2458$), the complex model accounted for nearly 41% of the variation in reenlistment intention (adjusted $R^2 = .4084$). The three variables added to the model were all among the six factors most strongly related to reenlistment (see table 6). The best predictor in the model was overall satisfaction with the military way of life (MILSAT) accounting for over 26% ($R^2 = .2628$) of the variation in intent to reenlist, more than the entire Boesel and Johnson model. While long-term participation in off-duty education (LONGPART) remained positively and weakly ($p=0.0784$) related to reenlistment, the practical effect upon intent to reenlist was negligible as it accounted for only one one-hundredth of one percent of the variation in the dependent variable REUP ($R^2 = .0001$). The other interesting result this model produced was the effect upon reenlistment associated with short-term participation in off-duty education (SHRTPART). The model showed short-term participation to be significantly ($p=0.0185$) and negatively related to intent to reenlist. Again, the practical effect of this relationship is very inconsequential as short-term participation accounted for

only one one-hundredth of one percent of the variation in the dependent variable REUP (R^2 = .0001). The difference in the direction of the effect between long and short-term participation may be explained by those who plan to leave the service soon taking advantage of the opportunity to receive financial assistance and prepare for the civilian

Table 6

Results of Stepwise Regression on Complex Model

Variable	Partial R^2	Model R^2	Coefficient	F	Prob>F
MILSAT	0.2628	0.2628	Pos	8365.3	0.0001
PGRADE	0.0875	0.3502	Pos	3160.2	0.0001
TIMELEFT	0.0253	0.3757	Pos	951.6	0.0001
JOBCH	0.0118	0.3875	Neg	450.6	0.0001
MARR	0.0105	0.398	Pos	410.7	0.0001
JOBSAT	0.0036	0.4016	Pos	142	0.0001
NAVY	0.0013	0.403	Pos	51.8	0.0001
USAF	0.0028	0.4057	Pos	110.2	0.0001
ENLPER	0.0008	0.4065	Pos	30.7	0.0001
BLACK	0.0005	0.407	Pos	18.6	0.0001
MALE	0.0006	0.4076	Pos	23.9	0.0001
TAFMS	0.0002	0.4077	Pos	6.1	0.0139
SHRTPART	0.0001	0.4079	Neg	5.5	0.0185
INDIAN	0.0001	0.408	Neg	5.2	0.0228
LONGPART	0.0001	0.4081	Pos	3.1	0.0784
END	0.0001	0.4082	Neg	4	0.0463
START	0.0007	0.4089	Pos	28.1	0.0001

job market in greater numbers than those who intend to remain in the service for a longer period of time and thus don't feel the need to participate in the short term. This is similar

to the negative effect on retention reported by Githens and Wilcove (1977). Their study also used a measure of short-term participation that only looked at those who participated during a ten month period (Githens et al., 1977). This suggests that short and long-term participation are not similar constructs and thus studies that use these different measures must be compared very cautiously.

In terms of the results hypothesized, the initial results with the model intended to replicate Boesel and Johnson (1988) and the complex model were surprising. The bulk of the intended study, however, was to look at differences in the education participation effect between sub-groups rather than of the population as a whole. Perhaps looking at these sub-groups would provide clues for analyzing the change in the relationship between participation in off-duty education and reenlistment. Toward that end, the testable hypotheses that had been developed around sub-group behaviors were tested next.

The first of these tests tested: *The retention rates are higher for more highly educated servicemembers if they participate in the voluntary education program.* Regression analyses were performed using the Complex Model and the additional variables created by the product of education level at the time of the survey and the dummy variables for long-term education participation. The test found no significant overall interaction effect between long-term education participation (LONGPART) and education level. The no-effect result was true whether education level was measured at the time of service entrance or at the time the survey was taken.

To focus specifically on each different education level and test the next hypothesis: *The effect of participation in voluntary education on retention rates of those enlisted members with some college but no degree will be greater than for those with no college or a baccalaureate.* Regression analyses were performed using the Complex Model for each sub-population defined by education level at time of survey (END) and each sub-population defined by education level at time of entrance into the service (START). These analyses were performed using the REG procedure and the BY function in SAS/STAT. The result is a separate regression for each sub-group already defined that uses only the specified sub-group for calculating the error term. The results of these tests showed no significant relationship ($p>.10$) between reenlistment intention (REUP) and long-term education participation (LONGPART) for any sub-group sorted by education level at the time the survey was performed. When the sub-groups were sorted by education level at time of entrance into the service, the relationship between long-term participation in off-duty education (LONGPART) and intent to reenlist (REUP) was significantly related, albeit weakly, for only two sub-groups, those who entered the service with no college education ($p=.0781$) and those who entered with an associate degree ($p=.0789$). Although the relationship between long-term participation in off-duty education could be called statistically significant for these two sub-groups the practical significance is again of little import. Long-term participation in education accounts for very little of the variation, $R^2=.0001$ and $R^2=.0025$ respectively, in reenlistment intention for the two sub-groups. The hypothesis that more highly educated service members

would be more likely to reenlist if participating in off-duty education was not supported. In fact, the data suggests that long-term participation in off-duty education is only likely to effect the reenlistment behavior of those who enter the service with no college or an associate degree. It appears that the weak statistical relationship between long-term participation in off-duty education and intent to reenlist is primarily the result of the effect of the 'no college' at entrance sub-group which comprises over 74% of the population under study.

The tests up to now were directed only at the differences between those who had or had not participated in off-duty education. As many military assignments impede participation in off-duty education at a particular time, the premise surfaced that perhaps military members were effected by the possibility of future educational opportunities. Based on that premise, the following hypothesis was developed and tested: *Retention rates are higher among those who want to participate in off-duty education even if they don't participate.*

A regression analysis was performed using the Complex Model and the additional dummy variable EDWANT, which indicated whether the respondent wished to participate, irrespective of whether they did or did not. The variable EDWANT was significantly and positively related to intention to reenlist when controlling for all the other variables in the complex model.

The relationship was robust with a p-value =.0001 and an F factor of 55.25. In fact, EDWANT was the seventh most influential variable in the twenty-two variable

model. While there is a strong statistical relationship (small p-value) that suggests that those who want to participate in off-duty education are more likely to reenlist, the practical significance is not large. The variable EDWANT accounted for less than two one-hundredths of one percent (R^2=.0014) of the variation in intent to reenlist.

The relationship between a desire to participate in off-duty education and retention was explored more thoroughly by looking at specific sub-groups by education level. The following hypothesis was tested: *Among Servicemembers with a similar education level, those who participate or want to participate in the voluntary education program are more likely to stay in the service than those not interested in the program.* Analysis of Covariance (General Linear Model) compared mean ratings of intention to reenlist (REUP) for those who participated or expressed a desire to participate in off-duty education (EDWANT=1) with those who were not interested in off-duty education (EDWANT=0) for each sub-group defined by the education level at the time the survey was conducted (END). All the factors from the Complex Model were controlled for. As table 7 illustrates, the relationship between a desire to participate in off-duty education and intent to reenlist is a positive one, up to the Master's degree level. For those who already possess a Master's degree a desire for further education appears to be negatively related to intention to reenlist. The relationship between these two variables only has strong statistical significance for those below an associate degree. This pattern makes some intuitive sense. For most military members an associate's degree is an adequate credential for military advancement. Those with an educational level below the two-year degree are

not as competitive for promotion to the senior NCO ranks. If you do not desire an associate's degree you are at a disadvantage for military advancement and thus may be less likely to remain in the service. Education beyond an associate's degree provides a much more marginal advantage, if any, for promotion and thus the connection between a desire for that level of education may not be as tightly linked to reenlistment. Although the connection is statistically weak (p=.129), the direction of the 'desire' effect reverses at the master's degree level. Again, this makes some sense. Master's degree programs are common through on-base education programs and in many cases, adult friendly programs can be found at nearby institutions. Doctoral or professional degree level education is much scarcer. Pursuing education at this level would prove very difficult for the active duty enlisted person. This may explain why a desire for education at this level is negatively related to retention. For most, the only way to pursue this desire would be to leave the service.

The next hypothesis to be tested concerned the interaction between participation in off-duty education and job satisfaction. Stated as: *Among those who report low job satisfaction, retention rates are higher for those who participate in adult education.* A regression analysis was performed using the Complex Model and an additional variable created by the product of job satisfaction (JOBSAT) and the dummy variable for long term education participation (LONGPART). This new variable was named SATPART. The resulting regression showed job satisfaction to be positively and significantly (p= .0001) related to intent to reenlist when all other factors in the model were controlled for.

The interaction term, SATPART, was also significant (p=.0003) and has a negative coefficient. This means that if the member is a long-term participant (LONGPART=1) then the effect of job satisfaction on intent to reenlist is reduced. In this case the effect is

Table 7

Comparison of intent to reenlist scores by desire for further education and attained education level.

	Mean Score: Intent to Reenlist		Probability
Education Level	Desire to Participate (EDWANT=1)	No Desire to Participate (EDWANT=0)	$\mu_1=\mu_2$
No College	5.377	4.94	0.0001
Some College	6.29	5.63	0.0001
AA Degree	6.89	6.83	0.773
BA/BS Degree	6.7	6.23	0.076
Some Grad. School	6.85	6.63	0.674
MA/MS Degree	6.83	7.85	0.1294

cut in half. If the coefficient of job satisfaction is reduced then low job satisfaction will have a lessor negative effect upon reenlistment and the hypothesis is supported. Again, however, the practical effect was very small with SATPART only accounting for three one-hundredths of one percent (R^2=.0014) of the variation in intent to reenlist.

Continuing to explore the relationship between job satisfaction and participation in off-duty education, the following hypothesis was tested: *Participation in the voluntary education program for those who report low job satisfaction increases satisfaction with the military way of life compared to those who are dissatisfied with their job who cannot*

participate in the voluntary education program. Using Analysis of Covariance ANCOVA (General Linear Model) the mean ratings of satisfaction with the military way of life (MILSAT) were compared between education participants and non-participants and for those who did and did not report low job satisfaction. The interaction between low job satisfaction (LOWSAT) and long-term participation in education (LONGPART) was also analyzed. All the factors from the Complex Model were controlled for.

Those who reported low job satisfaction (LOWSAT) had significantly (p=.0001) lower mean scores for satisfaction with the military way of life (MILSAT) whether they participated in long-term education or not. Among those who did not report low job satisfaction there was no significant long-term participation effect upon satisfaction with the military way of life. Among those who had reported low job satisfaction, however, participation in long-term education has a significant positive effect on satisfaction with the military way of life (see table 8).

If participation in off-duty education can serve as a substitute for job satisfaction the connection between satisfaction with the educational opportunities and overall satisfaction with the military way of life is important. The relationship was explored in more depth by testing the following hypothesis: *A military member's satisfaction with his or her opportunities for education and training effects that member's overall satisfaction with the military way of life.* The DMDC data set has 14 factors associated with military life, one of which is satisfaction with education and training opportunities. The effect

upon overall satisfaction with the military way of life of each of these 14 factors was analyzed using the stepwise multiple regression technique. The dependent variable

Table 8

Mean Military Way of Life Satisfaction Scores
for Those with Low Job Satisfaction

Long-term Participant	μ MILSAT	Prob. $\mu_1=\mu_2$
Yes	-0.099	0.0001
No	-0.258	

(MILSAT) is an overall rating of satisfaction with the military way of life. Of the 14 factors in the model, 13 were positively and statistically significant, the one exception being satisfaction with acquaintances and friendships. Satisfaction with 'job training and in-service education' ranked exactly in the middle in terms of influence upon overall satisfaction. While six factors were of more importance, training and education finished ahead of such important factors as retirement, promotion and job security (see table 9). Again, although the statistical significance was strong (p=.0001) the practical significance was very weak as satisfaction with training and education only accounted for forty-four one-hundredths of one percent of the variation in overall satisfaction with the military way of life.

This exhausted the planned tests of service member sub-group relationships between off-duty education participation and intent to reenlist. Several other hypotheses remained, however, that dealt with the influence of the service member's spouse on the reenlistment decision. Again, before exploring the unexpected results, the remainder of the tests were performed in the hope that all the results in the aggregate would help provide some insight to the question under study. The reader is reminded that the data set used to explore these questions about service members' spouses is not the same data used for the previous tests, but rather is only a sub-set of the original data. The data set

Table 9

Factors effecting overall satisfaction with the military way of life (MILSAT).

Variable	Partial R^2	Model R^2	F	Prob>F
Personal Freedom	0.2695	0.2695	9143.26	0.0001
Satisfaction w/ current job	0.0939	0.3634	3657.03	0.0001
Pay & Allowances	0.03	0.3934	1227.27	0.0001
Opportunity to serve country	0.0162	0.4096	678.05	0.0001
Working/Environ. Conditions	0.013	0.4226	560.12	0.0001
Environment for Families	0.0061	0.4288	266.34	0.0001
Job Training/in-service education	0.0044	0.4332	193.16	0.0001
Retirement Benefits	0.0035	0.4367	154.77	0.0001
Promotion Opportunities	0.0016	0.4383	71.4	0.0001
Work group/co-workers	0.0012	0.4395	51.53	0.0001
Job Security	0.0004	0.4399	15.89	0.0001
Frequency of Moves	0.0003	0.4402	13.86	0.0139
Assignment Stability	0.0001	0.4402	3.07	0.0185

used is the couples data set and contained the combined responses for those married respondents whose spouses also returned a survey. Only the responses from 'enlisted' couples were used in the analysis. That is, it analyzed couples where the military member was reported as being in the enlisted ranks.

The first hypothesis under test was: *Military members whose spouses support them staying in the service are more likely to intend to stay in the service.* A stepwise regression analysis was performed using the Complex Model minus the married dummy variable (MARR) with the additional variable (SPSUPPT) which is a measure of the spouse's overall support for reenlistment coded on a -2 to +2 scale. This variable was derived from the spouse's response to the question "At the present time, do you want your spouse to stay in the Service at the end of his/her current obligation?" (DOD, 1991a, p.6) The results were unambiguous (see table 10). Of the 21 variables entered into the model, nine were statistically related to intent to reenlist (REUP) at $p<.05$. The spouse's support for reenlistment (SPSUPPT) was the most important factor in the model, accounting for 25% of the total variation in intent to reenlist ($R^2=.2484$), over twice as much as the service member's overall satisfaction with the military way of life (MILSAT), which finished second ($R^2=.1055$).

Interestingly, the model that contains the spouse support variable is not a better model than the complex model in terms of explanatory power as it accounts for approximately 40% of the variation in intent to reenlist while the Complex model accounts for approximately 41%. Using the couples data set with the Complex Model without the

spouse support (SPSUPPT) variable produced a model that explained 32% of the variation in intent to reenlist. Obviously, SPSUPPT is highly correlated with other variables in the model but does provide significant explanatory power of reenlistment intention for married service members when several other factors are controlled.

Table 10

Results of Stepwise Regression of Couple Data Set Using the Complex Model with the Spouse Support for Reenlistment Variable.

Variable	Partial R^2	Model R^2	Coefficient	F	Prob>F
SPSUPPT	0.2484	0.2484	Pos	1808.9	0.0001
MILSAT	0.1055	0.3539	Pos	893.9	0.0001
PGRADE	0.0286	0.3826	Pos	253.7	0.0001
TIMELEFT	0.006	0.3885	Pos	53.3	0.0001
JOBSAT	0.0036	0.3922	Pos	32.4	0.0001
JOBCH	0.003	0.3951	Neg	26.7	0.0001
NAVY	0.0023	0.3974	Pos	20.9	0.0001
USAF	0.0016	0.399	Pos	14.3	0.0002
TAFMS	0.0006	0.3996	Pos	5.8	0.0164

The hypotheses related to the level of support (SPSUPPT) spouses show for the member remaining in the service were tested next. The following were tested concurrently:

1. The spouses who are most satisfied with the military way of life are more likely to support the military member remaining in the service.

2. There is a positive relationship between the quality of the educational opportunities available for the military spouse and the spouse's support of the member staying in the service.

3. The spouse of a service member who participates in the voluntary education program is more supportive of that member staying in the service.

4. Spouses who participate in education are more likely to support the service member's staying in the service.

A multiple regression using the stepwise method was performed using spouse support for reenlistment (SPSUPPT) as the dependent variable and variables for both long-term (LONGPART) and short-term (SHRTPART) participation in off-duty education, a measure of the spouse's satisfaction with the educational opportunities available to him or her (SPEDOP) and a dummy variable indicating whether the spouse was a student at the time of the survey (STUDENT).

The results are contained in table 11. Only three of the variables were significant at $p < .05$, (SPSAT) overall spouse satisfaction with the military way of life and (LONGPART) and (SHRTPART) dummy variables for long and short-term participation in off-duty education by the military member.

The data support the hypothesis that spouses who are satisfied with the military way of life are more likely to support the reenlistment decision. The data also support the hypothesis that the spouses of service members who participate in off-duty education over the long term are more likely to support the reenlistment decision while those whose

spouses are involved in short-term participation are less likely to support reenlistment. This parallels the service member's likelihood to reenlist, higher for those with long-term participation and lower for those short-term participation. The spouse's satisfaction with the educational opportunities available to him or her is positively related to support for the reenlistment decision, but the relationship is not particularly robust with a p-value of 0.0552. The data do not support any significant relationship between the spouse attending school and supporting reenlistment.

Perhaps the relationship between spouse support for reenlistment and his or her satisfaction with the educational opportunities available is accounted for in the overall satisfaction level with the military way of life. If that is the case the relationship between

Table 11

Results of Stepwise Regression of Factors Effecting Spouse Support for Reenlistment (SPSUPPT)

Variable	Partial R^2	Model R^2	Coefficient	F	Prob>F
SPSAT	0.1964	0.1964	Pos	1421.4	0.0001
LONGPART	0.0033	0.1997	Pos	24.2	0.0001
SHRTPART	0.0029	0.2026	Neg	21.3	0.0001
SPEDOP	0.0005	0.2031	Pos	3.7	0.0552
STUDENT	0.0003	0.2035	Pos	2.4	0.1224

satisfaction with the military way of life (SPSAT) and the satisfaction with the educational opportunities should be positive. This results in the following hypothesis: *The spouse's satisfaction with his or her opportunities for education and training effects that spouse's*

overall satisfaction with the military way of life. The DMDC data set has 21 factors associated with military life, one of which is satisfaction with education and training opportunities. To test this hypothesis, the effect upon overall satisfaction with the military way of life of each of these 21 factors was analyzed with a stepwise multiple regression with overall satisfaction with the military way of life (SPSAT) the dependent variable.

Of the 21 factors tested in the model, 12 were significantly ($p<.05$) related to the spouse's overall satisfaction with the military way of life. Among these factors was the spouse's satisfaction with his or her education and training (EDUC) opportunities. While this factor was more important than ten of the factors tested, among those twelve factors that were significantly related to the spouse's satisfaction with the military way of life, it finished next to last at number eleven. While the statistical relationship was strong ($p=.006$) the practical relationship was not, as the EDUC variable only accounted for eighteen one-hundredths of one percent of the variation in spouses' overall satisfaction with the military way of life.

Before proceeding with a discussion of the tests of the sub-group behaviors a summary of the test results would be useful. Table 12 provides a summary of the hypothesis under test and whether the hypothesis was accepted or rejected. As the summary in table 12 shows, the results of the data analysis produced mixed results in terms of the hypothesized results. Two unexpected but interesting results emerged. Based on the literature of adult education participation, I expected to see a greater

education participation effect upon reenlistment for those who were most highly educated.

Table 12

Summary of tested hypotheses and the results.

Hypothesis	Result
The retention rates are higher for more highly educated service members if they participate in the voluntary education program.	Reject
The effect of participation in voluntary education on retention rates of those enlisted members with some college but no degree will be greater than for those with no college or a baccalaureate.	Reject
Retention rates are higher among those who want to participate in off-duty education even if they don't participate.	Accept
Among Servicemembers with a similar education level, those who participate or want to participate in the voluntary education program are more likely to stay in the service than those not interested in the program.	Accept * * below AA.
Among those who report low job satisfaction, retention rates are higher for those who participate in adult education.	Accept
Participation in the voluntary education program for those who report low job satisfaction increases satisfaction with the military way of life compared to those who are dissatisfied with their job who cannot participate in the voluntary education program.	Accept
A military member's satisfaction with his or her opportunities for education and training effects that member's overall satisfaction with the military way of life.	Accept
Military members whose spouses support them staying in the service are more likely to intend to stay in the service.	Accept
The spouses who are most satisfied with the military way of life are more likely to support the military member remaining in the service.	Accept
There is a positive relationship between the quality of the educational opportunities available for the military spouse and the spouse's support of the member staying in the service.	Reject
The spouse of a service member who participates in the voluntary education program is more supportive of that member staying in the service.	Accept
Spouses who participate in education are more likely to support the service member's staying in the service.	Reject
The spouse's satisfaction with his or her opportunities for education and training effects that spouse's overall satisfaction with the military way of life.	Accept

Not only did this not hold true, but the data support the premise that those with the least education are most highly effected by participation in off-duty education. Two possible explanations come to mind for this phenomenon. First, the definition used for long-term participation required very little participation in education for those with no college at entrance into the service to be counted as participants. Recall that from 'no college' to 'some college' required completion of only one course while those who entered with 'some college' required completion of an associate degree to be counted as participants. The data from the group who entered with an associate's degree confounds that possibility, however. Although they had to complete a bachelor's degree to be counted as participants, long-term participation in off-duty education was positively related to intent to reenlist. The other possible explanation for this paradox centers around the motivation for enlistment. Those with no college experience may enter more often for the educational opportunities available in the service, while those with a college history have dropped out of college for some reason and may be less interested in continuing their college education. Within the latter group, those who have completed an associate degree have experienced some success in college and may be more inclined to want to continue their education. For example, a student might complete a low cost community college program and then enter the service to finance completion of a four year degree.

The other unexpected result concerned the relationship between a spouse's educational experience and that spouse's support for the service member reenlisting. Neither the spouse's satisfaction with his or her educational opportunities nor student

status had any significant relationship with support for reenlistment. Overall satisfaction with the military way of life seemed to be the largest factor in spouse support for reenlistment, accounting for nearly 21% of the variation in spouse support of reenlistment. The spouse's satisfaction with his or her educational opportunities, while positively related to overall satisfaction with the military way of life at a significant level are of little practical significance, accounting for less than two tenths of one percent (R^2=.0018) of the variation in overall satisfaction with the military way of life (SPSAT). The factors that influenced the spouse's satisfaction with the military way of life the most were those connected to quality of life for the family, such as service attitude toward families, housing and time the military member has available for the family.

With the exceptions noted above, the sub-group relationships between participation in off-duty education and reenlistment were largely as hypothesized from the existing literature on adult education. While these relationships often had convincing statistical significance, none of them were of any practical value as they had very little predictive power when other factors in the model were accounted for. Specifically, overall satisfaction with the military way of life and military pay grade accounted for the bulk of the predictive power of the models tested. The most puzzling question remained: Why did participation in education have such large effect on reenlistment in the Boesel and Johnson (1988) study and virtually no effect in this one?

One of the first possibilities that came to mind were differences in the populations. The Boesel and Johnson (1988) study did not provide extensive demographic data, but

several measures were detailed. For example, the distribution of education participants by service, sex, ethnicity and pay grade was provided as was a profile of the Tuition Assistance user based on several demographic characteristics. Similar information was obtained from the DMDC data and the results compared.

The Boesel and Johnson (1988) study clearly detailed TA participation rates for each service by pay grade. Using the long-term measure of participation (LONGPART), frequency tables for each service by pay grade were calculated. Those in pay grades E-1 and E-2 were excluded. Service members in these grades are usually in a full-time training status and are very limited in their ability to participate in off-duty education. Additionally, service members only remain in these grades for a few months at most. Viewing the results, table 13, one thing becomes readily apparent. Participation rates are extremely high in the DMDC data compared to the Boesel and Johnson study. In fact, the 1992 participation rates were several multiples of the 1985 rates. For example, the highest long-term participation rate for the Army in the Boesel and Johnson study was amongst E-6s with a participation rate of 15.4%. The 1992 data revealed the highest long-term participation rate among E-9s at 89.58%. The E-6 participation rate was 61.87%. The other services showed similar results. Depending upon pay grade, the Army's long-term participation rates in the 1992 data were 1.7 to 14 times greater than the 1985 rates. The Navy showed similar increases in participation rates while the Air Force had more modest rate increases but definite increases.

Table 13

Long-term Participation Rates by Service and Paygrade

	ARMY		USAF		NAVY	
	85	92	85	92	85	92
E-3	5.7%	9.77%	22.6%	21.75%	4.4%	5.43%
E-4	8.6%	22.43%	23.4%	38.83%	6.2%	10.97%
E-5	14.4%	45.79%	29.4%	56.2%	8.4%	24.94%
E-6	15.4%	61.87%	27.5%	69.28%	7.0%	39.45%
E-7	12.2%	69.14%	25.3%	79.6%	3.8%	53.21%
E-8	7.3%	80.98%	25.2%	89.2%	4.5%	56.64%
E-9	6.4%	89.58%	15.5%	90.6%	4.7%	53.43%

Some of the increase in participation rates may be attributable to differences in the measures of long-term participation. While the Boesel and Johnson (1988) study looked only at participation using Tuition Assistance (TA) funding, this study of the DMDC data measured long-term participation without regard to funding source. Boesel and Johnson estimated that TA accounted for only one-half of the college enrollments by service members. This is not to say, however, that the true participation rate is anywhere near double the rate of TA use. The measure of TA used by Boesel and Johnson counted TA use any time during the respondent's military career. As we have already discussed, many military students use two or more funding sources during their careers and often within the same year. While I am unable to make an accurate estimate of the actual proportion of those who participate in off-duty education who use TA at some point during their military service, it certainly is much larger than 50% and may approach 100%. Also

consider that the long-term participation measure used in this study also requires significant participation for most students as their education level must be raised to the next level to be counted as a participant. The Boesel and Johnson measure required only taking one course paid by TA to be counted as a participant. Taken together, these factors suggest that much of the increase in participation rates between the studies is real and not just a illusion created by the different measures.

Probably more important than the differences in long-term education participation rates between the two data sets are the differences between the two in participation patterns. The Boesel and Johnson (1988) study showed the long-term participation rate rising with grade, peaking at E-5 or E-6 and declining steadily thereafter for senior non-commissioned officers. The DMDC data revealed an entirely different pattern. The participation rate increased steadily as grade increased and did not peak until E-8 or E-9. The pattern is present in all the services although the magnitude varies somewhat. For example the E-9 participation rates ranged from 13 (Army and Navy) to 6 (Air Force) times higher than the 1985 rates.

When the long-term participation rates are plotted by pay grade (figure 1) the differences become readily apparent. Boesel and Johnson noted the low long-term participation rates for senior enlisted members in their study:

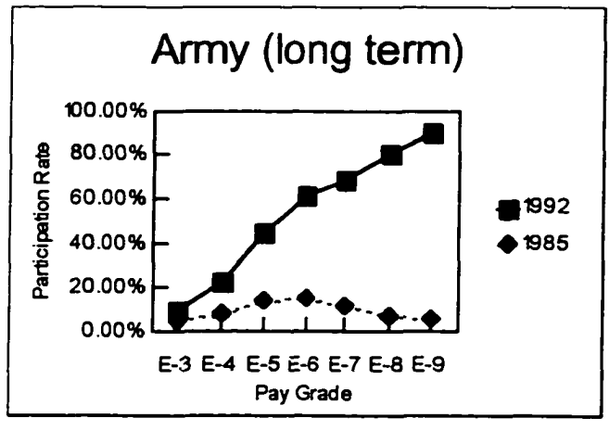
> Because those who have been in the military longer have had more opportunities to participate in the TA program at some time or other, one would expect usage to increase with longevity, and therefore, to a considerable extent, with paygrade. In fact, if records were maintained throughout a member's service life and the use of

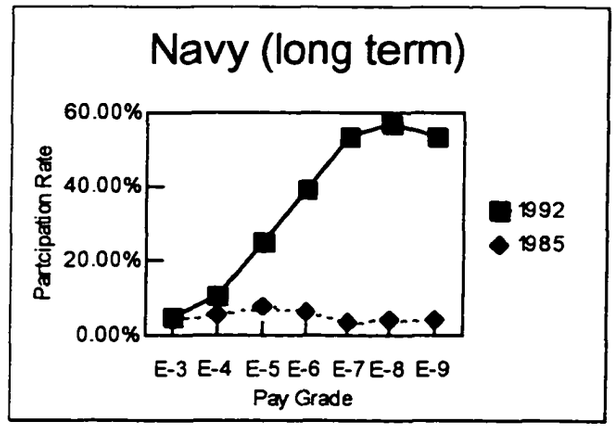
> TA had followed a stable pattern for the last 20 years, one would expect the participation rate to rise monotonically with longevity, unless TA users leave the service earlier than non-users. (Boesel et al., 1988, p.8)

But Boesel and Johnson (1988) found just the opposite in their data. TA users were less likely to leave the service. Why then this anomaly in their data? They remained mute on the point ignoring it all together. Perhaps the answer lies in their previous observation, "had the use of TA followed a stable pattern for the last 20 years" (Boesel et al., 1988, p.8). My data from the 1992 DMDC data set followed the long-term participation pattern that Boesel and Johnson intuitively expected and did not see. Perhaps the education participation pattern was not stable.

One possible clue to changes in participation patterns might be found in the short-term participation. Both the Boesel and Johnson (1988) data and the DMDC data set contained a measure of participation during the previous year. Again, the short-term participation rates were looked at to see if they were similar between the two data sets. Again the differences are astounding. The results varied by pay grade and service, but short-term participation rates were up significantly in every category. The smallest gain was for Air Force E-3s whose participation rate was up only 5%. The largest increase was for Army E-9s who participated at 956% of the 1985 rate. On average, the 1992 participation rate was 280% of the 1985 rate for the Air Force, 344% for the Navy and 458% for the Army.

Certainly some of the increase in participation rates could be attributed to differences in measurements. The Boesel and Johnson (1988) data counted only





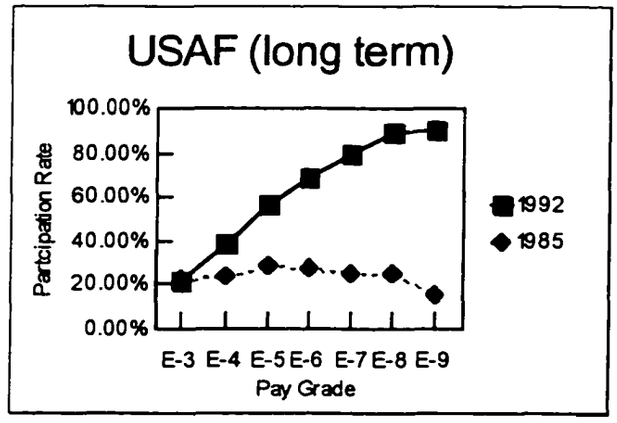


Figure 1. Long-term education participation rates by military paygrade. Boesel and Johnson data (1988) is labeled 1985 and rates from DMDC data set are labeled 1992.

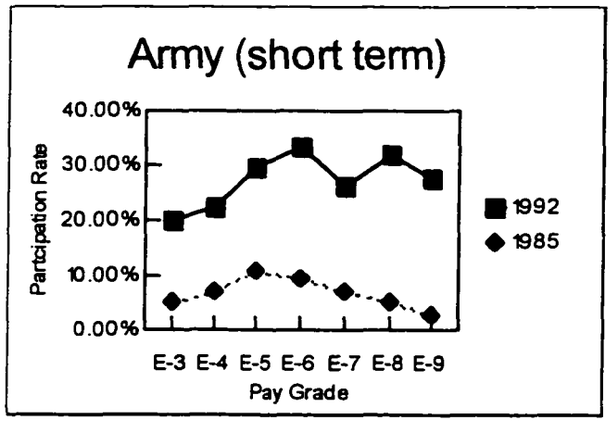
participation from TA use while my measure counted all funding sources. As already discussed, many service members use more than one funding source. Over the relatively short period of one year the proportion who used multiple funding sources would of course be smaller than over an entire military career. Again, it is hard to estimate the proportion of service members participating in off-duty education who are using TA, particularly for the period under study. The quarterly data collection method used in 1992 tended to count the same student multiple times if they participated in more than one quarter. Another factor that complicates estimating the proportion who use each source are the different levels of GI Bill that exist. The 'old' GI Bill ended in 1976. It was replaced by the Veteran's Educational Assistance Program (VEAP) and in 1985 by the 'new' or Montgomery GI Bill. All three of these programs pay different amounts to the veteran using benefits while in the service. Service members often choose which source to use based on which benefits they have and how expensive the tuition is at the school they are attending. My measure of short-term participation (SHRTPART) probably does overstate the difference between participation rates from 1985 to 1992, but certainly not to the degree that the rates have changed.

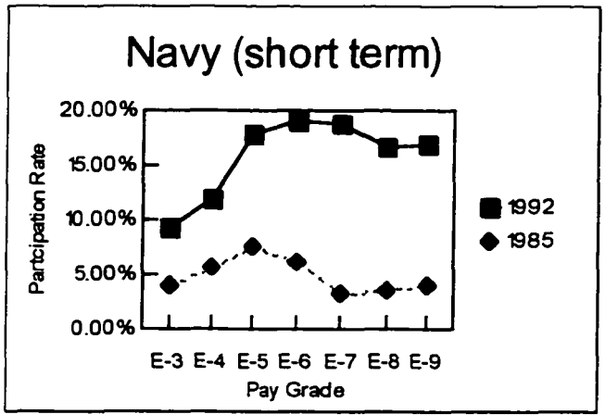
Just as with the long-term participation patterns, the short-term participation patterns exhibit a remarkable change for the upper enlisted pay grades. The 1985 data showed strong peaks in short-term participation at the lower pay grades with very low participation rates for Senior Noncommissioned Officers (NCO). The 1992 data reveals high participation rates for all of the NCO grades including the senior grades. When the

participation rates are plotted together (figure 2) it is clear that the participation rates are much more nearly level in the latter data regardless of grade.

If participation patterns had changed markedly based on pay grade, perhaps other participation patterns had changed as well. The demographic breakdown in participation rates is limited in the Boesel and Johnson (1988) study, but a few group identifications are available. Participation rates by race, sex, education level and Armed Forces Qualifying Test (AFQT) score are available. All of these factors except AFQT score are available in the DMDC data set.

This study focused only on enlisted participation in off-duty education, but the participation rates cited by Boesel and Johnson for the various sub-groups include both officers and enlisted personnel. To make comparison with Boesel and Johnson meaningful, frequencies were calculated for the desired sub-groups using the entire DMDC data set, both officer and enlisted. The limitations of the comparisons because of the difference between the studies in definitions of long and short-term participation that have already been discussed apply to the following discussion as well. We first looked at the participation rates separated by race. Although the DMDC data set provided several ethnic and racial categories, Boesel and Johnson (1988) only provided participation data for blacks and whites. Comparisons were made between the 1985 and 1992 participation rates of these two groups. Just as with the differences in participation rates by pay grade, the participation rates in the 1992 DMDC data set were two to five higher than the 1985 rates. Yet again, however, it was the change in the pattern within the data sets that





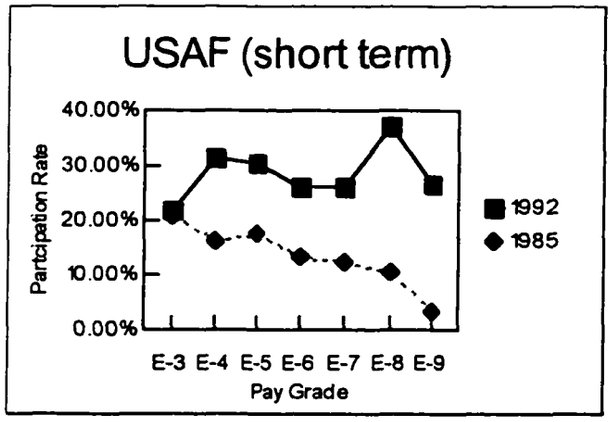


Figure 2. Short-term education participation rates by military pay grade. Boesel and Johnson (1988) data is labeled 1985 and rates from the DMDC data set are labeled 1992.

seemed most significant. As shown in table 14, for all the services in the 1985 data, black participation rates were higher than white participation. Boesel and Johnson hypothesized that this was the result of blacks joining the service in greater numbers than whites because they viewed it as an avenue of upward mobility with less institutional racism than the private sector. If upward mobility were a significant reason for enlistment, they reasoned, it followed that blacks would take greater advantage of all the opportunities for upward mobility including education. What is interesting in the 1992 data, however, is this reversal of relative participation rates (see figure 3). In all four services the participation rate of whites is higher than the participation rate of blacks.

Table 14

Comparison of Long-term Participation Rate by Race

	Army		Navy		USAF		Marines *
Race	1985	1992	1985	1992	1985	1992	1992
Black	10.90%	42.11%	5.70%	19.71%	25.80%	51.63%	23.80%
White	8.80%	42.96%	5.10%	30.04%	23.90%	54.49%	26.50%

* Note: Marine data not available in Boesel and Johnson study.

A similar comparison was made of the participation rates of males and females. As indicated in table 15, in the Boesel and Johnson (1988) data, the participation rate of females is higher than the participation rate for males Boesel and Johnson hypothesize that females participate in greater numbers than men for the same upward mobility reasons that racial minorities did. Again, the patterns of participation are significantly different

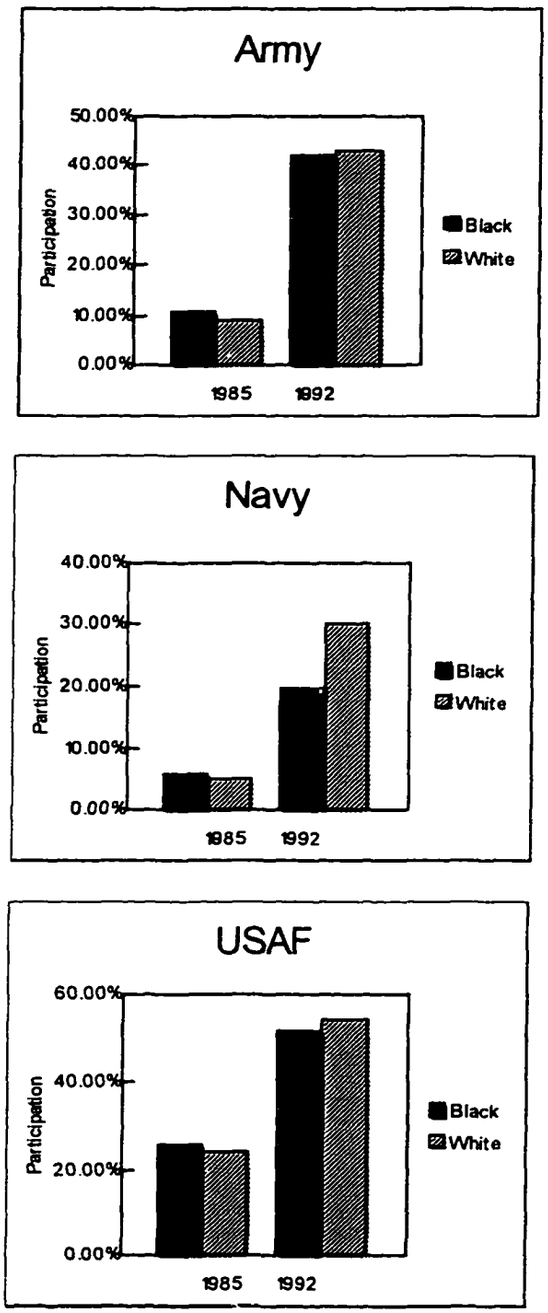


Figure 3. Long-term participation rates by race. Boesel and Johnson (1988) data is labeled 1985. DMDC data set is labeled 1992.

between the 1985 and 1992 data. In the Air Force and Army the proportions are reversed. That is, males are participating in greater numbers than females.

In the Navy the rates do not reverse but are much closer to even than in the 1985 data. Where before females participated at rates twice that of males, in the 1992 data the female participation rate was only 14% higher than males. Although we cannot compare Marine participation rates with the 1985 report, the 1992 Marine data show a pattern similar to the Navy with the female participation rate approximately 23% higher than the males. It may be that the higher sea duty rates of males in both of these services still effect education participation rates. A study by Green and Dunlap (1988) of Navy participants in off-duty education found much higher participation rates for women that was related to their higher numbers in shore based specialties.

Table 15

Comparison of Long-term Participation Rate by Sex

	Army		Navy		USAF		Marines *
	1985	1992	1985	1992	1985	1992	1992
Female	14.00%	40.93%	11.00%	30.66%	26.10%	50.15%	30.96%
Male	9.00%	42.41%	4.70%	26.98%	24.00%	54.67%	25.10%

Note: Marine data not available in Boesel and Johnson (1988) study.

The last comparison between Boesel and Johnson (1988) and the DMDC data was between education participation rates by education level. This posed two problems. The first difficulty arose because of the differences in measurement of education level in the

two data sets. The Boesel and Johnson report broke down both high school and college attainment by years attended as well as degrees received. Our DMDC data did not contain all of these levels. This problem was fairly easily overcome by only using those education levels that were the same in both data sets. This still allowed a meaningful comparison across different levels. The second problem was the result of the measure used for long-term participation in off-duty education (LONGPART). To be counted as a participant, the military member had to show an increase in education level since entrance. Hence, my measure did not capture those who were participating, but hadn't reached the next level. As participation rates were the issue under review, any comparison by education level would be badly biased. For this reason only short-term participation rates were compared. This variable was measured very similarly in both data sets and still provides a comparison of any changes that occurred between the studies. Again, because of differences in the education levels available in the data sets, only two education levels were compared, 2 years of college and college graduate. A comparison of those below the 2 year mark would have been useful, but the data collection methods did not allow it. The DMDC data set provided education level as some college no degree, 2 year degree, and four year degree. Boesel and Johnson listed education level as 1 year of college, 2 years, 3 or 4 years, college degree. Thus, the only two meaningful common points were used. The results are contained in table 16.

Even allowing for the differences in the measurement of short-term participation between the Boesel and Johnson (1988) study and this one, the participation rates are

considerably higher in the latter data with one exception. The participation rate for those with a BA/BS degree in the Air Force did not increase substantially. I attribute this to the long standing pressures predating the 1985 data collection for Air Force Officers to complete a master's degree to remain competitive for promotion. Those pressures have kept the participation rate of officers, all of whom have a bachelor's degree, high.

When the frequency tables comparing participation to education level were examined, several other interesting relationships became apparent. If we look at long-term

Table 16

Comparison of Long-term Participation by Education Level

	Army		Navy		USAF		Marines *
Level	1985	1992	1985	1992	1985	1992	1992
2-year	9.6%	44.33%	7.8%	35.85%	21.6%	51.37%	44.02%
College Graduate	4.8%	14.37%	1.9%	17.3%	15.7%	17.78%	10.98%

Note: Marine data not available in Boesel and Johnson (1988) study.

participation, that is participation defined by a change in education level, we find that the group with the highest participation rate is those who enter with no college. As this is the group who most easily change their education level, even by taking only one course, this could be expected. If we look at short-term participation rates by entrance education level we find that those that entered the service with some college are the most likely to have attended a civilian college within the previous twelve month period, followed by those with a two year degree and then those with no college. If we compare the short-term

participation rates by present education level, we find those with a two year degree or some graduate work the most likely to be participating. It makes sense that those working on a bachelor or master's degree would most likely participate in off-duty education. This premise is further supported by the steep drop in participation rates for those with a Bachelor's or Master's degree. It is interesting that the short-term participation rates for those who presently have any degree are higher than those who entered the service at the same level. For example, among those who entered the service with an associate's degree 22.08% participated in off-duty education in the year proceeding the 1992 DMDC survey while among those who earned their associate's degree while on active duty 44.03% participated in the same period. For those at the bachelor's level the numbers follow a similar pattern at 19.11% and 53.94 % respectively. This indicates that those who attain a higher educational level in the service are more likely to continue their education than those who enter with the same attainment level. It may be that those with college experience prior to the service enter because the educational experience was not satisfactory, while those without college experience are more likely to enter with the intention of attending school. Another explanation is that those who start their education while in the service are more likely to enjoy or value the experience and desire to obtain more education.

One other statistical tool was used in an attempt to provide more information about participants in off-duty education. A profile of both the long-term and short-term participants might be useful. The analysis done to this point revealed that many

demographic variables were related to participation in off-duty education. This tended to confound the profile. For example, males and females might have different participation rates as might members of different pay grades. If males and females weren't evenly distributed by pay grade, differences in participation rates between the males and females might be attributable to the confounding factor, pay grade.

To obtain a profile that controlled for some of these factors, a logistic regression was performed using participation as the dependent variable and all of the variables from the complex model as the independent variables. This provided a good mix of demographic and attitudinal variables for the profile. Two separate logistic regressions were performed, one using the dummy variable for short-term participation (SHRTPART) and one using the dummy variable for long-term participation (LONGPART). Sixteen of the seventeen independent variables in each model were statistically significant at $p \leq 0.0033$

The results of the logistic regressions of the model for both short and long-term participants are contained in table 17. The odds ratio shows the effect of each independent variable upon the dependent variable. For example, an odds ratio of 2 would indicate that an increase of one unit in that particular independent variable would double the probability of the dummy coded independent variable being one. An odds ratio of less than one indicated a lessened probability of the independent variable being one. To illustrate this with our data: The independent variable is short-term participation. All else being equal, if a military member is male the odds of them being a short-term participant in

Table 17

Results of Short & Long-term
Participation Profile

Variable	Short-term (SHRTPART) Odds Ratio	Long-term (LONGPART) Odds Ratio
MALE	0.683	0.687
WHITE	1.027	1.195
BLACK	1.138	1.115
MARR	0.896	1.163
END (education level)	1.648	Not Significant
START (education level)	Not Significant	0.21
ARMY	1.159	0.487
NAVY	0.729	0.246
MARINE	0.704	0.282
PGrade (Pay Grade)	0.922	1.762
TAFMS (Time in Service)	1	1
ENLPER (enlistment period)	0.854	1.313
TIMELEFT (on enlistment)	1.037	0.979
JOBSAT	1.019	0.973
MILSAT	1.039	1.011
LONGPART	3.889	Not Applicable
SHRTPART	Not Applicable	7.066
JOBCH (employability)	1.02	1.034

off-duty education is only 68% that of a female, the omitted group. If the independent variable is a continuous variable rather than a categorical or dummy variable the odds ratio is stated slightly differently. For example, for each increase in pay grade of one unit, all else being held constant, the probability of the military member being a short-term

participant in off-duty education is only 92% of the member one pay grade lower. Stated another way, if all else is the same, an E-4 is only 92% as likely to be a short-term participant than is an E-3.

By analyzing the odds ratio we find we can draw the following conclusions about the short-term participant in off-duty education: Females are more likely to participate than males by nearly 1.5 to 1. There are a least two possible explanations for this situation. Perhaps at least part of the difference is attributable to the similar patterns of enrollment found in American society as a whole where women are significantly more likely to attend college than men. Another explanation is the same one offered by Boesel and Johnson (1988) who proposed that women were more likely to join the service for upwardly mobile career opportunities and thus are more likely to take advantage of all opportunities for advancement. Yet a third possible explanation is possible. Despite the reduction of restrictions on the assignment of women in the military, women are still less likely to be assigned to units with high deployment rates and field training requirements because of their absence in combat arms specialties.

When we look at the effect of race we find that blacks are the group most likely to participate, followed by whites, who participate slightly more often than the omitted group 'other'. Again the upward mobility motivation may be at work here. It may also be that blacks who are often at an economic disadvantage join the service in greater numbers for the educational opportunities and then take advantage of them.

The single service member is more likely to participate than a married one. This may be the result of the additional demands upon the married service member's time and money placed by family responsibilities. The higher the education level of the service member the more likely he or she will be a short-term participant. This follows the widely held findings in the adult education literature that the higher the education level the higher the participation rate.

A look at service affiliation reveals that the Army has the highest participation rates followed by the Air Force (the omitted group) and trailed significantly by the Navy and the Marines. The ship board deployments of Navy and Marine personnel are one possible explanation for the lower short-term education participation rates of these service members.

Several other demographic variables effect participation rates as well. The higher the pay grade and later the enlistment period the service member is serving, the lower the probability that he or she is a short-term participant. As service members reach their educational goals they are more apt to stop attending college classes. This is likely responsible for at least some of the decrease in participation rates for those who are on a later enlistment or of higher grades. Another factor that comes into play is the propensity of those most likely to leave the service to participate in higher numbers. As previously asserted, it is possible that those who have decided to leave the service are more likely to take advantage of the educational opportunities before they depart. As those in the lowest grades and the earliest enlistments are the most likely to leave the service it would follow

that they would participate in greater numbers. A short-term participant is likely to be more satisfied with both his or her job and the military way of life and have a higher expectation of good civilian employment.

The long-term participant has many of the same characteristics and some different ones. Again, females are more likely to participate. Both blacks and whites are more likely to participate in off-duty education over the long term than the omitted group 'other,' but whites are slightly more likely to participate than blacks, a reversal from short-term participation. One possible explanation for this reversal is the disparate college attrition rates for blacks and whites found in American society as a whole (Fleming, 1981). While blacks are more likely to participate in off-duty education programs, they may have less success finishing them and thus raising their education level, a condition required to be counted as a long-term participant.

The relative participation rates of groups defined by race and sex derived from the profiles detailed above should not be confused with the changes in participation rates for blacks and women previously discussed. The previous discussion concerned differences in the participation rates noted by Boesel and Johnson and those revealed in the DMDC data. That comparison was for the population as a whole, both officer and enlisted, while the profiles are for enlisted personnel alone. Additionally, and perhaps more importantly, the profiles control for numerous other factors such as pay grade, enlistment period, service affiliation, etc., while the 'raw' participation rates previously discussed do not.

Over the long-term married members are more likely to participate than single ones. Married service members are more likely to reenlist and make the service a career. Perhaps this is reflected in higher rates of educational attainment over the long haul. The model used, however, should have controlled for differences in enlistment period, pay grade, etc. which should account for much of the differences in career intention. The differences in long-term participation rates between married and single service members may be real or it may be an artifact of weaknesses in the model used for the analysis.

When we look at the effect of service affiliation there is another change from short-term participation patterns. Air Force personnel are significantly more likely to be a long-term participant than Army personnel. The Marines and Navy follow a very distant third and fourth. The surprising factor here is the reversal of the Army and Air Force participation rates from short-term to long-term participation measures. Two explanations come to mind that help explain this. Remember that the measure of long-term participation in off-duty education used in this analysis requires the service member to raise his or her education level in discrete steps, i.e. associate to bachelor's degree. Air Force personnel are at a distinct advantage in pursuing an associate degree because of the existence of Community College of the Air Force occupationally oriented degree programs. These programs usually mean than an Air Force member has to take considerably fewer civilian college courses to qualify for an associate degree because they receive full credit for their military technical training. Another possible explanation concerns the manner in which these two services recognize the service member's

educational attainment. The Army enlisted promotion system awards promotion 'points' for civilian education on a one point per semester hour basis for certain enlisted promotions. This results in many soldiers accumulating college credits without regard to degree requirements, a problem that the Army has just recently acknowledged (Department of the Army, 1997) and is taking steps to correct. The Air Force on the other hand has no such objective reward in its enlisted promotion system. Rather, educational accomplishments are part of a more subjective 'whole person' concept. Off-duty education is one factor considered by supervisors and commanders in preparing performance reports as well as central promotion selection boards for senior enlisted promotions. In this system educational attainment, displayed by award of degrees, is the preferred method. Because of these different organizational reward systems it may well be that Air Force personnel are more focused on increasing their educational level in a manner that would be reflected by the measurement system used in this study.

Pay grade and enlistment period are strongly related to long-term participation as would be expected. Both of these factors are to some degree a measure of longevity in the service. It follows that the longer one is in the service the more opportunities one has had to improve one's education level and thus be counted as a long-term participant. I can offer little explanation as to why the same logic does not appear to hold true for Total Active Federal Military Service (TAFMS), a measure of the time a service member has been in the service. It may be that pay grade and enlistment period account for all the variation in participation because of longevity and thus there remains nothing for TAFMS

to explain. As promotion in the service is to some degree related to participation in off-duty education because the organization rewards education, it well might be that pay grade being a measure of both longevity and educational attainment explains differences in long-term participation much better than any simple measure of longevity.

Service members who are long-term participants in off-duty education are more satisfied with the military way of life and have higher expectations of civilian employment. Although satisfied with the military way of life, long-term participants do report slightly lower job satisfaction. This parallels the early finding that the connection between job satisfaction and satisfaction with the military way of life is weaker for long-term participants. Another possible explanation is that some service members who raise their education level and thus are counted as long-term participants may become dissatisfied with jobs they now feel are beneath their education.

The last observation that emerged from the two profiles of the participants is the strong connection between long and short-term participants. It is not surprising that a short-term participant is nearly four times as likely to be a long-term participant as long-term participation would require short-term participation. What is enlightening is that a long-term participant is seven times as likely to be participating in the short term than is someone who has not raised their education level. This supports the observation that military members who raise their educational attainment while in the military continue to participate in educational activities at higher levels than those who have not raised their educational attainment.

The quantitative data and their analysis produced nearly as many questions as answers. Certainly the most puzzling question is what happened to the education participation effect that was so prominent in the Boesel and Johnson (1988) study? With this question in mind the qualitative data were collected and analyzed.

Qualitative

As already detailed, 31 semi-structured interviews were conducted to determine the attitudes of at least some military participants in off-duty education programs. The interviews were conducted and audio recordings made. During the interviews notes were taken of the responses to the questions. Upon completion of the interviews the notes were reviewed and analyzed for the existence of broad themes. Several themes emerged that were particularly relevant to the questions under study. Several other themes, while interesting, were judged to be unrelated or only remotely related to the research question. For example, many of the respondents voluntarily delved into the issue of the loss of military fringe benefits. While educational benefits are part of the benefit package, the discussion was on a much broader basis and the theme emerging had little to do with educational issues. Although changes in benefits may impact service retention, the issue was thought to be tangential to the central focus of the study and thus not pursued further.

Using the broad areas as a mental anchor, the tapes were played, indexed and analyzed in their entirety. The following issues seemed to be addressed in many interviews:

1. The multi-faceted motivation for participation in off-duty education.

2. The evolution of the member's goals or desire for educational attainment.

3. The message the organization sends about the value of education.

4. The inequality of educational opportunities by specialty or assignment.

5. Preeminence of the mission or military needs over educational goals.

6. Short-term retention in the service to meet educational goals.

With these broad areas in mind and using the issue list and the previous notes for each interview as an analysis guide, each tape was reviewed one more time and specific passages that were illustrative of these areas were excerpted and transcripts made. No formal transcription protocols were used as the data was not going to be analyzed for organizational details of the speech. The occasional 'ah' and 'and' were ignored in the transcripts as were a few aborted phases that were followed by a restatement by the respondent. The overall attempt was to streamline the transcription process, but the first priority was to preserve all the meaning intended by the speaker. In some cases the portions that were transcribed required explanatory notes to convey information that was contained elsewhere in the interview. In those cases the notes are inserted into the text in italics. Not all of the preliminary themes bore fruit and others seemed to contain sub-themes.

Before proceeding with an analysis and discussion of the findings from these interviews a word of caution. As already detailed the interviews represent a very small sample of a very small population at two small isolated military installations. Only the Army and Air Force are represented and all respondents were interviewed while actively

engaged in off-duty education. While I believe the analysis of these interviews will help to make sense of the quantitative results already observed, the reader is advised not to generalize the results too widely.

One of the first themes that became readily apparent is one of the most relevant to the research questions posed. Even before the tapes were transcribed and analyzed it became apparent that virtually everyone interviewed believed that the military service valued off-duty education. Of the thirty-one interviews conducted 28 of the respondents were unequivocal in their belief in this view. Numerous examples were cited by the respondents as 'proof' of this view. Many of those interviewed talked on this subject for several minutes. What struck me was the depth to which this educational value seemed to be present in the organization. Those interviewed provided ample evidence that the desirability of participating in off-duty education was an espoused value of both the Army and the Air Force. The words "pushed", "encouraged" and "supported" were used over and over again when the subject was discussed by those interviewed. An Air Force E-5 who had been in the service for 8 years summed it up nicely when he said: "All my supervisors in the past have encouraged me to go and everything you read that has Air Force written on it that talks about education, says it's a good thing."

Nearly all of those interviewed related that their supervisors encouraged them to pursue education.

> Yeah my commander that I have right now is really supportive. Well, I know he's read a couple of my papers and he would tell me, I'm glad your going to school and that was a good paper, keep it up, keep up the good work. Nothing negative like, you sure you have time for school? *(Air Force E-3)*

> My first sergeant has always been supportive. *(Army E-6)*
>
> Since I've been in the Army, every supervisor I've had, everybody has been telling me go to college, go to college. *(Army E-4)*
>
> They always told us to further our education. They highly recommended that we enroll in school. *(Army E-4)*

The interviews provided ample evidence that this value was exhibited by supervisors and commanders not only in word, but in deed and policy. Despite my twenty-three years of experience in the Air Force, I was surprised at how far supervisors would go to accommodate the educational pursuits of their subordinates. Some accommodations were modest, such as allowing a long lunch hour to enable someone to take a lunch time class or permitting flexible scheduling around classes.

> The commander says yes, they can go to lunch time classes and it rolls down hill. I've been going to lunch time classes for a year. ... I've never seen someone say no, you shouldn't take classes, even the old dogs. *(Air Force E-4)*
>
> Well, personally for myself, my supervisor is very supportive of me and he understands my schedule sometimes. And sometimes like he lets me stay a few hours later to finish my work so I can, so I can leave earlier the next day. *(Air Force E-3)*

Other accommodations were well beyond modest, such as permitting service members to come in from the field during exercises to attend class or allowing six months of full-time study as an inducement for reenlisting:

> I was in an aviation unit which really helped because I had all my evenings free. I was able to go to school during the day after PT *[physical training]*. I took a class after PT, a class during lunch and I took two classes in the evening. I did that continuously, non-stop and they were nice enough when we were out in the field they'd let me come in at night to go to school. And when I reenlisted I got six months off to go to school full time. So I was a full time student day and night for six months. *(Army E-6 who earned 80 semester hours in 18 months)*
>
> Because the Army really wants you to get it *[education]*, so in some cases they'll bend over to see to it that the soldier can attend the class. Like during a field

> training exercise they'll do those things to get you back, see to it that you attend class. *(Army E-7)*

> If nothing comes up they'll let you go during that field problem, too. You'll still go to the field, but they'll let you come to the rear to go to school, but you have to go back out to the field after your classes. *(Army E-4)*

Attending school can even become part of your official duties, in some circumstances substituting for other military activities.

> At the Sergeant Major's Academy they gave you an option to do special projects or you could work on this thing. So I asked if I could go ahead and start my Master's while I was in the academy and they let me. *(Army E-9)*

In some cases the encouragement goes beyond an accommodation or option and actually becomes a requirement for progression within a particular job specialty. One student explained how a new professional certification program for contracting specialists required civilian off-duty education to retain your qualification.

> Not only is my job wanting us to be more academic, we have to have what's called an APDP certification now to make us more equivalent to officers in our career field.... *[Without it]* You can be not be allowed to reenlist, you're not mobility eligible, you probably can be denied PCS *[permanent change of station transfer]* Its very important that you get it. As soon as you get the required courses finished you fill in the paperwork to get the certification. *(Air Force E-7)*

In a few cases enlisted personnel are even required to obtain an associate degree to perform their duties. For example, personnel who instruct in the Air Force technical schools must be degreed. "All instructors teaching accredited courses in the Community College of the Air Force must hold an associate or higher degree within 12 months of assignment to instructor duty" (HQ USAF. 1994, p.2). "I started out to get that associate level that associate's degree that AETC required..." *(Air Force E-7)*

As the interviews progressed it became evident that this 'push' on education seemed to exist at many different levels in the organization. Nearly all of those interviewed expressed the belief that educational attainment was rewarded, in some cases quite objectively, such as the Army's promotion system for E-5 and E-6. Up to 100 promotion points, in an 800 point system, are awarded, one for each semester hour of college credit a soldier has attained. "It's still part of the promotion system for E-5s and E-6s.... One eighth of it's civilian education. So if that's in the promotion points system they have to value it somehow." *(Army E-6)*

In other cases the reward is not quite as visible as in the case of central selection boards for senior NCO promotions. While no attempt was made to verify empirically the notion that educational attainment was important for advancement to the senior NCO ranks, the perception was nearly universal in all of the Army and Air Force NCOs interviewed. In fact 25 of the 31 interviewed specifically mentioned the importance of education for senior promotions. This impression may have merit, however, especially for Air Force and Army personnel. The 1992 DMDC data showed that an exceptionally high number of senior NCOs do possess at least an associate's degree as illustrated in table 18.

Table 18

Percentage of Senior NCOs with Associate's Degrees or Higher

	Army	USAF	Navy	USMC
E-8	43.19%	69.31%	32.14%	16.78%
E-9	73.82%	65.09%	29.78%	16.53%

I guess it's an unwritten rule. I've been told that if now you don't at least have a CCAF degree that it will be really hard to make the senior enlisted ranks like Chief Master Sergeant. It's, you know, it's not an official thing, but it's like an unwritten rule. When they send the packages through the promotion board if you don't have a degree there you kind of like get slided over to the side. *(Air Force E-5)*

For eight to ten years it's been one of the graded areas to promotion to senior master. Without it, in a lot of cases that's made the difference between people being promoted to those grades versus not. *(Air Force E-7)*

Fifty percent of the people this last cycle that were promoted to senior *[E-8]* had an associate's degree or higher. Almost all of them had some education, I think it was ninety-eight percent, it was a real high number of the people that were promoted this last cycle had at least some education. *(Air Force E-7)*

When I got into the Air Force CCAF was being pushed, but that was because you needed some type of degree on the outside. Now if you look at the boards, for the senior *[E-8]* boards, they look and see if you actually have it. A bachelor's is a great thing to have, a master's you're well on the way. There's lots of Chiefs out there that don't have any kind of degree, but now they're saying we can't do without it. *(Air Force E-8)*

It's pretty much mandatory to get promoted in the enlisted ranks, in the centralized promotion system you have to have college. *(Army E-6)*

We were just discussing it at work with my supervisor that I work for. At one time to make Sergeant Major you almost have to have a general studies degree, a two year college degree to become a Sergeant Major.... No matter whether you're officer or enlisted, you have to have college. *(Army E-6)*

That's the standard now, you must have some type of education, degree in the field in order to obtain that rank. *[Not a rule but]* It's highly recommended. *(Army E-7)*

From what I hear other people talking about, I hear them, they always tell me back then they weren't too big on education. Back in their time I guess. They say now you need education to get promoted higher up in the ranks. *(Army E-5)*

That's a must, that is a must. When your records are screened by the central selection board up at DA *[Department of the Army]*, not only are they looking at formal schooling, your assignments, whether you've been a First Sergeant like myself or what, they're looking at what have you done to improve yourself.

> Civilian education plays a big part in that. We all know you're going to do the First Sergeant, the battle staff, we all know you're going to do that, but what else have you done. So senior NCOs know they have to invest in themselves..... It is in writing. It's not in writing that you will have, or that you must have, what's in writing is that's it's 'strongly encouraged'. Being in the military for some twenty years, 'strongly encouraged' normally means you must. *(Army E-8)*

> You're not going to make chief *[E-9]* unless you have a bachelor's degree in today's Air Force and they know that. So it's very important, that's why you see a lot of E-6s, E-7s really jump on the band wagon and try and get that degree. They're not so much worried about GPA as getting that degree. *(Air Force E-5)*

While nearly all of those interviewed specifically mentioned that the promotion system rewards education, many mentioned other organizational rewards as well. This was particularly true among Air Force interviewees who mentioned the positive impact of education on winning organizational awards, such as Airman or NCO of the Quarter. "Even when you look at making staff *[E-5]* and tech *[E-6]*, awards are a big deal. Education is a competitive factor in getting awards." *(Air Force E-8)*. "Now if you're concerned with going up for boards, you know and getting awards and stuff, education plays a big role. " *(Air Force E-5)*

Several also mentioned that participation in off-duty education was reflected very favorably in the Air Force Enlisted Performance Report (EPR).

> I took one class in that whole first enlistment. One class and that was a history class. And that I only took because a supervisor told me that an EPR was coming up and I should take a class because it looks good on an EPR that you're pursuing your education. *(Air Force E-5)*

> The fact that, I've heard this many times, if you're going to college it's an automatic five *[top score]* on your EPR, pretty much. *(Air Force E-3)*

> It's pretty much fixed into just about everything as far as our rating system, the EPR system, as far as the enlisted job, education is in there, there's a place for that off-duty education... *(Air Force E-5)*

Perhaps even more telling than the espoused values and organizational rewards that seemed to be attached to participation in education are the attitudes that were revealed by the interviews. People related stories of how participation in education changed how superiors, peers and subordinates related to them.

> Most of the individuals I work with or for, once they know you're pursuing a degree, there's almost an attitude change. *(Air Force E-4)*

> My commander here, he was real helpful actually, especially when he found out I was pursuing a graduate degree. And as such, at that time I would say I was probably treated differently than some of the other senior airman at that time. Both commanders, I've had two commanders and they treated me a little bit differently than the others because I guess intellectually they felt I was, you know, maybe more above some of the others. *(Air Force* E-5)

> The only thing now that used to separate the officers and the enlisted was a piece of paper and I don't see that anymore. I see them coming together more collectively and calling upon each other saying, well you've got more information and knowledge in this area, I've got it in this, how can we better this situation? I feel like I'm a valuable asset now. I don't get looked at and say well you're just an enlisted person. *(Air Force E-4)*

Several NCOs expressed concern about keeping up with their troops or improving their education level to effectively perform their duties as they progressed in responsibility.

> The fact that you have troops coming in, they are a lot younger and a lot brighter. It's very important for, I think, middle managers and senior NCOs to get that education because those kids come in now, they've got a lot on the ball. *(Air Force* E-5)

> I tell my Non-Commissioned Officers and senior ones too, once you make E-8 your chances of making E-9 are minimal anyway, but you get the education so you can go into those meetings with those people and understand what the hell they're talking about. If you can't understand what they're talking about, can't communicate with people, and we deal with, our jobs in the medical field, we deal with a very educated environment. And as you move up the ranks to sit in

> meetings and not understand what they're talking about you're behind the eight ball. *(Army E-9)*
>
> Nowadays everything is writing, everything now is academic. You've got to read and understand. That's the Army now.... If I have soldiers underneath me I can't have them see me, if I make a mistake or if I make too many mistakes in writing they're going to look down, I'm not effective. *(Army E-6)*
>
> But also we have a lot of airmen coming in with education. I have an Airman who just in-processed, he has a bachelor's degree. He's an Airman, why didn't you come in commissioned? Well they didn't have anything for him. His supervisor may not have taken a class, ever. How would that make you feel? If you are supervising someone with a bachelor's degree. I think I'd get my butt in school just to keep up. *(Air Force E-5)*
>
> It helps with promotions and you need it to keep up with your soldiers. *(Army E-8)*
>
> I felt I didn't know what I needed to know for one, the rank that I was holding and two, just for being in the position in the world that I was in. *(Air Force E-8)*
>
> It wasn't until as I made rank and realized that I was deficient in some areas that I needed to go back to school to try to fill in some spots that I wasn't, didn't have filled up in high school. *(Air Force E-7)*

Several NCOs that were interviewed expressed a commitment to education that went beyond a personal responsibility to improve their own educational attainment. They seemed to believe that it was their duty to help and encourage their subordinates to pursue education as well. Part of their role as an NCO was to spread the word to their charges.

> I highly encourage it on all of my feedbacks *[formal career counseling]* with my troops. I always tell them pursue your college degree. *(Air Force E-6)*
>
> I think the Air Force pushes you, if you're going to make senior you need to have an associate's degree. It's one of the blocks you're told to fill if you want to make rank. .... We should be mentoring our people and they should know that that's required. *(Air Force E-7)*

> But I think we're kind of going back again and saying, education is important, but like I said, let the education be the motivating factor. Don't just do that to try and get promoted. And that's what I preach to my NCOs. *(Army E-9)*

> I just push it continuously, that's one of my soldiers right there. I'll take him over here and have him sign up whether they would pursue it after, then it's on them. I believe in it, if not for the military, it will just make you a better person on a whole. *(Army E-6)*

> I've always told my soldiers, no matter whether they stay in the Army three years, fours years, five years or make it a career, the education, nobody is going to take it away from you. *(Army E-6)*

> When I talk to people I push education. I don't shove it down their throats, but I like to talk to people about it. *(Air Force E-5)*

> Now when I have a private come in I tell him to go to school. It's part of my job. *(Army E-6)*

What about those interviewed who didn't support the view that the service values off-duty education? Why do they see if differently? Even these three respondents seemed to express a mixed message about off-duty education. For example, an Air Force E-3 stated that he thought the Air Force's value on education wasn't very genuine, " I think it's a face value kind of thing .." Upon further questioning as to what made him believe that he offered the following:

> Like, they have their idea of what an education is, but what their idea of what an education is, isn't what everybody's idea of an education is. I think that it's not stringent enough, their CCAF is a joke.

Further questioning revealed that he did not wish to pursue an occupational related associate degree from the Community College of the Air Force (CCAF) and although he was free to pursue his bachelor's in history using tuition assistance, he believed the Air Force was too focused on the technical degrees. In essence, it wasn't that the Air Force

didn't value education, but rather that the Air Force valued a particular type of education too much in his view.

An Army E-5 thought the Army was sending a mixed message about the value of off-duty education:

> I say yes and no. There's units that won't even let you go to school and there's units that will.... They're more worried about mission than civilian education. They preach civilian education and when you actually want to go do it, there is never enough time.

An Army E-4 seemed to have a similar complaint:

> When I first got here, all they pushed for was education. Get that education, you don't have to stay or get out. But then they don't want to help you. You know, they don't want to give you time off so you can go register for school. They don't want to give you time off for your classes during lunch, or you're going to be late coming back at 1300. I think they say it because then it attracts most youngsters nowadays.

I interpreted their remarks to mean that the Army didn't value education above all else and in their units at least, education didn't have a high enough priority.

The dissenters notwithstanding, at least among those interviewed there is strong evidence that the military service values education institutionally. It is a highly visible espoused value, expressed in written and verbal communication from the organizational leaders. The organization also displays policies and behaviors at the working level that seem congruent with this espoused value by encouraging subordinates to go to school and implementing unit policies that enable them to do so. If we look a bit deeper, the interviews provided substantial evidence that the formal and informal organizational reward system placed a great deal of value on educational participation. Formal promotion points systems, the unwritten rules about educational attainment for

advancement to the senior NCO ranks and the bestowal of awards and good performance reports on those who participate in educational activities all suggest that this value is not only espoused, but lived as well. Even deeper into the fabric of the organization is the attitudes many expressed about how educational advancement effected their relationships with peer, superiors and subordinates alike. Several NCOs even expressed the notion that encouraging and facilitating the educational participation of their troops was a duty.

The depth of the organizational value placed on education has at least, in some people's minds, gone so far that failure to embrace the value results in punishment. An Air Force E-7 when questioned about whether the service values education replied: "The Air Force appreciates it, but I don't think in some instances they appreciate it enough. It's more of an expectation." An Army E-8 discussing the increased emphasis on education over his 20 year career explained it this way:

> More so now in the last, probably five years. Especially for the enlisted. It used to be as long as the enlisted man could do the hands-on things on the ground, education took a back seat. Now I think with more technology we became more educated, it's almost forced upon the enlisted person to be more educated.

The data from the interviews did, however, suggest that while the services value education, the actual opportunity to participate in that education is not equal for all members at all times. Several of the respondents provided examples of disparities in educational opportunity and access based upon career specialty and assignment. This supports an assumption used in the quantitative data analysis that education opportunity was not constant for the individual servicemember, but varied considerably from

assignment to assignment. The location and unit of assignment was often cited as one factor particularly by Army respondents:

> When I was at Travis, I was there three years and I wasn't able to take one class due to the work load and the fact that my supervisor petty much felt that basically we were just trying to get out of overtime. *(Air Force E-5)*

> It was kind of difficult to go to school there because I was in a border unit so we were gone quite often out in the field and all that other stuff, so I went probably as much as I could when I was there. *(Army E-9)*

> When I was in the eighty-second I could not go to school. I literally could not. I was the only chief in my section. The average duty day was from 6:00 AM until 10:30 at night. There was no way. *(Army E-6)*

> I took a few courses and around 90, 91 time frame the Saudi kicked in. I went and did that thing for a while and I came back and I ended up at Ft. Lee. I wasn't able to attend school at Ft. Lee because of job requirements, I was in a rapid deployment unit. *(Army E-7)*

> They value it but then in some career fields they can't weight it too much cause there is not enough time for college unless you do it by correspondence course, cause a lot of jobs in the military it's hard for them to get eight to ten to twelve weeks, whatever the term is without no field problems involved for them to go to school.... *(Army E-6)*

> The reason I haven't taken any in the five years I've been here is because the unit I was in we was always gone so much, we deployed twice since March of 93. We went to Saudi, we came back and then we deployed again in March of 94, we went to Korea. The unit I was in was in and out the field all the time and I never did have time to take any college courses. *(Army E-4)*

The military specialty was also mentioned by several people as affecting educational emphasis and opportunity. This seemed particularly so amongst Air Force interviewees:

> I don't think it was pushed as hard when I was in supply. Back when I first came in I was the driving force behind it, but now that we're in contracting I think because we deal with multi-million dollar contracts and negotiations and things like

> that, that we are business aware, if we've been trying to finish our college degrees and be more equivalents with our contractors out there. *(Air Force E-6)*
>
> I started a master's program, took only one course, but I didn't even finish it.... I had just become a First Sergeant so my job really became demanding. *(Army E-9)*
>
> For instance my MOS *(military occupational specialty)* in personnel, I am afforded the opportunity. I think the Army as a whole has an interest in educating the Army. But there are certain MOSs that aren't really afforded the opportunity, infantry, things like that they don't have the opportunity to attend courses .... *(Army E-5)*
>
> When I was an Airman as a cop, when I had inquired about education you know it was like well, you don't have time you're working shift work. It wasn't a priority. *(Air Force E-5)*
>
> In the career field that I'm in, aircraft mechanics, it's really difficult for the young guys to go. They make it hard, the mission makes it hard for young aircraft mechanics to get to school, they're working around a flying schedule and that makes it difficult for them to get to school. *(Air Force E-7)*
>
> ..however, there again it also depends upon your occupation in the Air Force, I've talked to people that have spent twenty years in the service and this is the first time now that they're gotten into the management area as a senior NCO that they've been able to go to work *(at education)* because of duty commitments and other things they weren't allowed the opportunity to go .... *(Air Force E-5)*
>
> This program is the first time I've been able to actually be on the day shift where I can actually go to class like I really want to. Again, this is after I've been in the Air Force for over eighteen years, when I started this program. But a lot of people, they don't get that opportunity. *(Air Force E-8)*

Some portions of the interviews focused much more closely on the individual than on the organization. One area of interest was the individual motivation that the service members expressed for their involvement in off-duty education. For many, the motivation was very clear and one dimensional. For others, the answer became much more complex with several members detailing the evolutionary change in their educational goals and

motivation. If the question is more closely defined on the primary reason they started to participate in off-duty education, the answers were a bit more direct. Two major reasons emerge, to improve their career opportunities when they separate from the service and to improve their career opportunities within the service. The latter by improving their chances for promotion or obtaining a degree needed for a job or training program they desire, such as technical instructor duty or physician assistant training, both of which required an associate degree to qualify.

While the sample is much too small to generalize the results, it is interesting that the Air Force and Army personnel responded very differently. The Army personnel predominately were motivated by military career objectives while the Air Force people overwhelmingly spoke of post-service employment opportunities. Table 19 provides a breakdown of the responses.

Another theme that appeared frequently concerned the evolution of the servicemembers' educational desires, motivation and goals. Of the thirty-one service members interviewed, all but three or four of them related stories that exhibited significant and evolutionary changes in their educational goals and desires.

Table 19

Reason for Participation in Off-duty Education

Reason for participation	Army	USAF
Post service job	6	13
Promotion in the service	7	1
Other service opportunity (commissioning, PA school, instructor duty)	2	2

Before discussing specific themes that emerged in more than one story two mini-cases are presented to get a flavor of the type of changes we are discussing. While these specific cases cannot be called average or typical, they are good examples of the construct I am trying to capture with the term evolution. The stories have been taken from the interviews and are told in the words of the interviewees. They have been edited for clarity and succinctness. Follow-up questions that kept the story going have been omitted to enhance continuity.

The first story is told by an Army E-9 who after 23 years in the service is just finishing his master's degree.

> I originally came in the Army in 1973 because I was young, married and a high school drop out. Actually, when I came into the Army the biggest thing I wanted to do was get my high school diploma. So I went and actually tested out for the GED. I did it right in basic training, I don't remember if they had BSEP *[Basic Skills Education Program]* or anything in them days, they just said if you take a test and you do well on it, then you can go straight and take your GED. So that's what I did, I took a test, did well on it and went straight and took the GED and passed. In Germany actually is where I kind of started going to school. I started off taking English and I think I took a history course in Germany, I took a couple of courses there. I'd take a couple of night courses here and there, but I really wasn't on a degree program, I was just kind of taking a course here and a course there. I challenged the CLEP tests. I CLEPed out twenty-four of the thirty hours. But I still wasn't on a direct tract, I was kind of here and there. Then I kind of backed off a little bit and I was just involved with sports and mainly my job and stuff. And I guess where I really woke up was the first time I was in the zone to

make Master Sergeant *[E-8]* and I didn't get picked up and I really thought I was going to get picked up because I had done all the right jobs in the military that I had to do. But I didn't have the education and the way I found out was, I actually knew someone setting on the board and he came back and told me that my record was immaculate except I didn't have the education. And that's what held me back they felt. I was working in a company orderly room at that time and I had a company commander that pulled me aside and told me, hey, you're doing all the right things in the Army, you're doing good but you need to really sit down and start getting your education and start thinking about that. So what I did was I enrolled at a university and for the next two and one half years I went to school at night. I was at year 14 in my career. It was my goal to finish school. In 1989 I graduated. I started a master's program, took only one course but I didn't even finish it. I had just become a First Sergeant so my job really became demanding. In 1992 I took a couple of courses. When I came here I got back into it. One of the main reasons I wanted to finish is, number one, because in my job I work with a lot of physicians, I work with a lot of professional people, a lot of officers and I felt that to represent the enlisted people properly going into meetings and things that I needed to be able to understand what they were talking about and just be able to speak the same lingo as they would so, not only that but personally I wanted to finish. I have two more classes to finish this *[master's]* program then I want to go back to school to learn how to use computers. I really have shortcomings in computers. Never thought I'd get one *[college degree]*. I had a lot of people that were talking about it, but I never had the aspirations because I was too busy trying to work. I was more focused on working, feeding that young kid I had. Once I got into the door the motivation itself was the school, the learning itself became the motivation. I no longer did it just to get promoted, but promotion came as a result of doing it after that. I've even thought about going for another master's in political science, I've always been interested in political

science. I don't think I'll ever get my Ph.D., but I will never stop. I just enjoy it too much. Once I got into school I just loved it. I think the biggest thing was getting in. You really just start thinking different. Before that I was just really narrow minded. I was one of those gung-ho military guys that everything was OD green and that's all I did was OD green. I didn't think outside of the box. After I got into school I just enjoyed it so much.

The second story is by an Air Force E-5. She has been in the Air Force for approximately eleven years. She has over three years of college and expects to finish her bachelor's within the year.

I joined because I didn't at that time want to go to college, I had no desire, I didn't do very well in high school. I didn't have a lot of ambition to go to school. My parents aren't very motivating when it comes to going to school. I don't come from an educated family. I'm the only one out of five kids to graduate high school. A Chief *[E-9]* that worked in my building talked me into going to school, taking a class. We were just talking and you know, he found out that I hadn't taken any college courses or anything and he just was just trying to convince me that it would be good for my career and good for when I got out and just myself too. He really had a fight on his hands. I didn't go and sign up immediately after that. I was still real against it, hesitant, but I decided I'll give it a try. It took me a few months before I decided, well I'd try one class and I'll see how it is. I took a course I was interested in, a psychology course. And I did real well in it as opposed to in high school when I didn't. My grades in high school were Cs. I never, my whole time going through, middle school, high school, grade school, never got an A in a class. When I realized, you know, this college isn't so bad I got into it and I've been going to school ever since. This Chief, you know, he was really the catalyst that started it. I enjoy going to school. I enjoy setting a goal for myself and meeting that goal and knowing I'm not as stupid I thought I once was. I hope by

> April of next year I'll have my bachelor's degree. After that I'm going to go on for my master's degree. Once you get started, for me, once I got started I couldn't stop. You don't want to lose the momentum. Keeps my brain awake. Before it was like well, I just want my associate's, well, then it was, I'm stopping after my bachelor's. I'm not stopping!! Maybe once I retire depending upon the job that I get I may want or need additional education for additional skills. I don't think I'm going to go for a Ph.D. or another master's degree or something, but I'll probably always be involved off and on in some kind of education.

Several concepts seem to be present in many of the interviews just as they are in the two stories related above. One recurring theme concerns the initial motivation to begin school. In many cases the impetus is from an external source. In the case of our Army E-9, the need for education to get promoted started him toward a degree. In the case of the Air Force E-5, the persuasion of a Chief started the ball rolling. In both cases however, we note that once they began the educational journey the process itself became the motivator. The transformation from external to internal motivation occurs frequently in this small sample.

> One of the reasons I joined the service is because I didn't want to go to school. I started out to get that associate level, that associate's degree that AETC required and once I got started in the education field then you could start to see the advantages. I think most people don't see the advantages of education to start out. Right now I don't have any aspirations for a Master's degree, but I enjoy education, I enjoy learning. *(Air Force E-7)*

> I had no real goals at the time I joined the force. Specifically, I got put before a board, the equivalent of an airman of the quarter board, this is when I was very, very young, this is when I had just gotten into the Air Force, and I did miserably, miserably. I was very disappointed in myself and so I said this is the last time this is going to happen to me and then I just started studying a lot of different things. I just wanted to become more and more aware of things. I was tired not being able to talk to people. They seemed always to be much more with it, aware. I'm a true proponent of life long learning. I had no idea I'd be this far. *(Air Force E-8)*

> I really had no choice, you know, to leave. Either go to college or join the military. So I joined the military. My parents, they just always told me unless you have the money to go to school, you know, go to college, either you can go or you can't. It all depends if you have the money or not. They really didn't know about student loans, all the grants and all that kind of stuff that's out there, so that's why I joined the military cause I didn't know any better. A Staff Sergeant named Sergeant Byron, Staff Sergeant Byron he was really into education and he basically pushed me and pushed me and pushed me until one day I finally went ahead and I started. I didn't work for him he wasn't in my section or nothing. He just kept on hammering me about it cause he knew he was very close to finishing school himself.... And after I took my first two classes I was hooked. I enjoyed it. I want to get my master's. I want to get a graduate degree. *(Army E-6)*

> When I first come in I didn't know what I was going to do with my life exactly. I was having a great time. I was seeing the world. I really hadn't at that time thought about furthering my education. The first time I started going to school was because of promotion in the Army, I needed promotion points. Then I did the thing where I had a little points and I got promoted and I started to celebrate and the celebration lasted years. Then I went back I think in 89. .... and I just received my associate's degree last week. I really felt good about that. So now presently I'm working with a university trying to obtain my bachelor's degree before I ETS out of the Army. *(Army E-7)*

A strong commitment to high educational goals exists in most of the interviews. In the 31 interviews, 24 of the respondents expressed an educational goal of at least a master's degree and 17 specifically stated they believed in life long learning and would continue to engage in some educational activity for the rest of their lives. Many of the responses to the question, when will you stop participating in off-duty education, exhibited an unusual enthusiasm for education. For whatever reason many of those who start to participate in off-duty education really become turned-on to the educational experience:

> I don't know, not anytime soon I'll tell you that. After I get a teaching certificate from the bachelor's I'll probably pursue a master's degree. Will I go beyond the master's degree? I don't know. I used to have a very specific goal, it's something that's come over the years, probably in the last ten years, continuing education is an interest of mind. *(Air Force E-7)*

> I don't think I'll ever really stop. For a lot of the positions I seek I'll be in a college setting and opportunities to sit in and audit a class or take one just for career professional reasons, I'll probably always take a class. *(Air Force E-4)*
>
> Never now. I don't think I'll ever get my Ph.D., but I will never stop. I just enjoy it too much. *(Army E-9)*
>
> A doctorate. I'd like to if at all possible. *(Army E-6)*
>
> When I have one foot in the grave. When I absolutely can't walk any more. A college education to me is just showing me how to learn. It's not an end once when I get it done. Even when I get a doctorate degree there's always another language you can learn, there's always another place you can visit. *(Army E-6)*
>
> I can't honestly give you an definite answer on that because I really believe when you stop learning you die. *(Air Force E-3)*
>
> Once I get going I think, I'm going to like it so much that I'm just going to keep, I think I'm always going to be going to classes once I get started. The hardest part for me has always been getting started. *(Army E-4)*
>
> I don't think I ever will. There always has got to be more somewhere out there. I've always loved school, but I just didn't want to go right out of high school. *(Army E-4)*
>
> Never! Well, my first class at UNH, there was a sixty-five year old man taking an algebra course. He was just taking it because it was fun to him. Like I said before, it keeps you busy. Then I thought about it and once I started going to school I loved going to school. I don't think I'll ever want to stop, once I have kids, once I'm forty, fifty, you know a class here and there, you know. *(Air Force E-3)*

One theme that was particularly interesting because of its relationship to the question of off-duty education and retention. While not present in overwhelming numbers, the issue did arise several times in the small sample of interviews. Several of the respondents suggested that one of the reasons they reenlisted was because they had not yet met an educational goal they had set for themselves. In most of these cases the

member had entered the service with the intention of obtaining technical training and an educational credential that he or she felt was necessary for a successful civilian career. When it was time to make the reenlistment decision they had not yet obtained the credential they thought necessary and so reenlisted either to pursue it or because they were not prepared for the civilian world.

> I knew when I came in that I didn't want to make this a career and I mean you can't walk out of the military without anything behind you and make a living, basically is how I felt. So I knew I had ... education was the way to go to help establish, I guess, that foundation for me for later on to separate. *(Air Force E-5)*
>
> My goals weren't met yet. I wanted to have plenty of experience doing what I do to be able to get a good job after I get out of the Air Force and I wanted to have some sort of education, college education. *(Air Force E-5)*
>
> Basically when I reenlisted the first time I felt like I was still wavering. I wasn't really going anywhere. I was in school, but I couldn't see that light at the end of the tunnel and I thought rather than jumping ship now and losing the credits I have and saying I'll go to school on my own, it wasn't a financial decision that my husband and I could afford for me to go full time so we thought it would be better if I stayed in and just continued to take the two classes a semester and continue to work toward my bachelor's. *(Air Force E-4)*
>
> I didn't have an education and I was going to get out, you know, after six or seven years. *(Air Force E-5)*
>
> Being able to work and go to school at the same time, making what I make and still have seventy-five percent of my tuition paid for versus if I was to get out where would I be working in order to continue to pursue my college. And I was happy with my job so that was just the deciding factor. *(Air Force E-6)*
>
> I considered the needs of my family. I considered the possibility of continuing on with the education that I had started. I wanted to go out and go back to my civilian college. I could have done it if I had no family responsibilities, but the GI bill was not sufficient to pay even for my own education, let along take care of the family. I liked fighting fire.... I liked the military environment. *(*Army E-6)

> I've thought about it and I think it depends on myself too. If I finish school before I separate, then I think I'll go for separation and just work as a civilian. But then if I don't, I'll just stay in the military. *(Air Force E-3)*
>
> I would like to get my degree before I leave here from Alaska. I don't foresee that happening because of the cap they have on the TA assistance and I don't want to spend so much money now while I can get it seventy-five percent off. I want to reenlist for another two years, at least until I get my general studies. I will not get out until I get that. *(A*rmy E-4)
>
> I am considering extending to stay up here for another three years if I can. If I can't, then I will get out up here because I'm taking courses now, I'm just right now starting to take courses for my bachelor's degree in criminal justice. So I would like to be able to stay and be able to finish my bachelor's degree. *(A*rmy E-5)

One other area explored during the analysis of the interview tapes was the perception of those interviewed on changes in the military's emphasis on off-duty education. The results failed to produce any strong consensus, but two patterns did appear. In both services the younger troops that expressed an opinion almost always said that they believed the emphasis had increased in the last ten to fifteen years. Among Air Force Senior NCOs the message was unclear with some suggesting the emphasis has increased while others believed it peaked a few years ago and has been de-emphasized since. Within the Army most senior NCOs suggested that the emphasis on off-duty education peaked in the late eighties or early nineties. Regardless of the perceived change, however, nearly all believed the emphasis is still strong.

Again, while caution must be exercised when generalizing the results of the qualitative portion of this project, there appears to be strong evidence that at least the Air Force and Army place a strong organizational value on off-duty education. This value is present in the espoused values of the organization, the policies, reward systems and even

the attitude of the organizational members. The transformation in the personal value of education to many of those interviewed and the evolutionary process that creates a committed lifelong learner supports the premise that an educational orientation is very deeply ingrained within the organization. In an organization that produces written procedures for nearly all facets of operation it's interesting that, for the most part, this emphasis is only felt or conveyed verbally. Yet the depth of this organizational value is clear to the members. An Army NCO getting ready to retire expressed it as a certain atmosphere :

> I think it's very important that I do it now at this stage because I really don't think I'm going to be that enthused or have the time or energy to attend college once I get out. I think the atmosphere is different on the outside as far as going to school. I think I'll be geared more toward doing that eight hours and then I want to do those things like, take care of the house, have my weekends back. The Army really wants you to get it..... The people on the outside, you know, we want production in the military depending upon your job field. On the outside it's production oriented, most people want you to already have that degree. *(Army E-7)*

Summary

By combining the results of the quantitative findings and the qualitative findings we can produce a clearer picture of the phenomena under study. Recall that the purpose of this study was to explore the relationship between participation in off-duty education and retention in the military services, especially for sub-groups suggested by the literature. The quantitative analysis of the DMDC data supported many of the sub-group behaviors hypothesized from the literature on adult education. In those cases where the hypotheses

were not supported, plausible explanations exist when taking into account the unique aspects of the military environment. One factor emerged from the analysis for which no satisfactory answer has been proposed. In practical terms, participation in off-duty education appears to have little effect upon reenlistment when several other factors are taken into account. Specifically, the service member's pay grade and overall satisfaction with the military way of life seem to account for the overwhelming majority of the variation in reenlistment intention in the models tested.

This in itself is not terribly bothersome. Previous studies have shown a neutral or negative relationship between participation in off-duty education and retention. Those that suggested a negative relationship usually cited a economic labor market model as a theoretical basis (Githens et al., 1977; Boesel et al., 1984). The theory holds that a service member with higher educational credentials has more economic worth in the civilian labor market and thus was more likely to exit the service. Unfortunately, the studies that cited a labor market used a short-term measure of participation when comparing the retention rates of participants and non-participants, a measure that may not be comparable with long-term participation.

Previous studies that have found a positive relationship between participation in off-duty education and retention have offered no compelling theoretical framework to explain their results, nor with one notable exception have they controlled for other factors thought to affect retention (Alley et al., 1995; Boesel et al., 1988). That exception is of course the Boesel and Johnson study.

Despite the lack of an espoused theoretical foundation, the Boesel and Johnson (1988) study was taken as a benchmark for this research because from a statistical point of view it was the most relevant found in the existing literature. It used a large sample with sound sampling methodologies, was fairly recent and carefully controlled for a least some of the other factors thought to be connected to reenlistment in the services. For the most part the DMDC data suggest that the military student behaves much as the literature suggests in terms of sub-group education participation behaviors. But just as clearly the data strongly indicate that the education participation effect so strong in the Boesel and Johnson study had all but disappeared. If this drastic change were to make sense, the underlying theoretical mechanism for the change would have to be found. A careful review of both the Boesel and Johnson data and the DMDC analysis results began to yield some clues. One of the most dramatic differences between the Boesel and Johnson data and the DMDC data was in the participation patterns based on pay grade. Recall that long-term participation rates for the top enlisted grades were quite low compared to the mid-tier enlisted group in the Boesel and Johnson data (figure 1). If participation patterns remained relatively stable over a long period of time this result is counter intuitive unless participants left the service sooner than non-participants. Boesel and Johnson found just the opposite effect from participation, however. That is, participants were apt to stay in the service longer than non-participants. They offered no explanation for this conundrum, yet the obvious answer is that education participation patterns had not remained stable over the two decade plus period represented by Boesel and Johnson's survey respondents.

On the other hand, the analysis of the 1992 DMDC data supported their expected result, that is, long-term participation rose steadily with pay grade suggesting that participation in off-duty education was fairly stable over the time period represented by the military careers of the respondents in the 1992 DMDC survey. Obviously, something had changed between 1985 when the data for the Boesel and Johnson study were gathered and 1992 when the DMDC survey was taken. Because of the limited information available in the Boesel and Johnson report it is difficult to fix a specific time period when the education participation patterns changed. What is evident, however, is that the change occurred at the E-5/E-6 level in all the services. These grades can cover a huge period of time in a military career. In some services individuals could be promoted to E-4 with as little as three years of total military service. At the other end of the spectrum many service members are not promoted beyond the E-6 level and retire in that pay grade at the twenty year point. The 1985 long-term participation seemed to peak with E-5 in the Air Force and Navy and at E-6 for the Army. Grades that typically would be reached sometime between the fourth and tenth year of service. While this still presents a rather broad window, it allows a starting point for further analysis. In the 1985 data set participation rates appeared to be stable for only those service members who had entered the service during the six to ten year period before 1985. Service members who had entered the service at earlier dates did not appear to participate at the same rates.

The 1992 DMDC data presented an entirely different picture. It appeared that the probability of an enlisted member participating in off-duty education was very high as they

advanced in grade. In fact, for the Army and Air Force the probability was approximately ninety percent for those reaching the top of the enlisted grades, E-9. As educational attainment plays at least some role in military promotions, some of the connection is expected. If an education improves your chances for promotion, those promoted to the highest grades are more likely to have the most education. A careful reading of the data suggests the relationship is not that simplistic, however. If we look at the long-term education participation rates by enlistment period, table 20, we see a similar pattern.

While the total percentages are not quite as high as they are for the very top enlisted grades, clearly the overwhelming majority of enlisted personnel who make a career of the service, 5 enlistments or more (approximately 20 years), participate in off-duty education at some point in their careers. This is particularly apparent in both the Army and Air Force where at least three-fourths of the career personnel have participated. In other words, it appears that participation in off-duty education is strongly connected with a military career, particularly for the Army and Air Force. Further, the pattern of participation is relatively stable throughout that career.

What if participation in off-duty education had become the norm or even an expectation if you will, for military members? If you intend to remain in the military service and make a career of it, you must participate in off-duty education. Not only would this explain the huge change in participation patterns, but it also might explain why the participation effect had become so small. If a military career required education participation for advancement and thus longevity because of the military's 'up or out'

personnel policies, perhaps the effect of long-term participation might be contained within the pay grade and enlistment period variables. Further, if education participation were required for a successful military career and thus became part of the military way of life, those who refused to participate or found themselves unable to over a long period of time

Table 20

Long-term Education Participation Rates by Enlistment Period

Enlistment Period	Army	Navy	Marines	Air Force
1	13.57%	9.34%	10.85%	27.88%
2	34.89%	25.06%	26.00%	44.74%
3	58.30%	39.02%	37.83%	62.40%
4	66.53%	48.12%	46.36%	70.43%
5 or more	74.99%	50.21%	53.46%	78.01%

might become dissatisfied with the military way of life while those who were content with the need for educational attainment would be more satisfied with the military way of life. It could be that this need for education had become so entwined in the military culture that differences in the reenlistment intentions of participants and non-participants were fully explained by other variables such as pay grade, enlistment period and satisfaction with the military way of life.

While the qualitative data gathered from the interviews by no means can be considered a valid sample for the entire military population, the shear weight of the evidence in that small sample does provide a confirmatory data point. Consider that the

respondents related their experiences and impressions from their entire military careers which collectively represented scores of locations and over 328 years of service. Nearly all provided strong evidence that the military values education, encourages it and rewards it. But beyond that, some of the evidence from the interviews supports the premise that military people believe education is required for a military career. If you want to stay in the service you must get promoted. To get promoted you must get educated. Does everyone do it? Of course not, but not everyone gets promoted either. Recall that nearly 90% of those in the top enlisted grades in the Army and Air Force have participated as have 75% of all career members regardless of grade.

Taking this reasoning one step further, if a military career required participation in off-duty education, those who wished to have a career would desire to participate, if for no other reason than to support their goal of a military career. The analysis of the DMDC data supports this premise, finding the desire to participate in education (EDWANT) significantly (p= .0001) and positively related to intention to reenlist. The qualitative data again supports this reading:

> You walk down any hall in any squadron and probably now half of them are doing off-duty education and the other half have thought about it. Its just not right at this time, but they know eventually they're going to need to do it. *(Air Force E-4)*

> But a lot of people, they know that they need to get it and you talk to them and they say well, I really need to go to school but, and they always have a reason why they can't. *(Army E-5)*

Other pieces of the puzzle also seemed to fit. Recall that the Boesel and Johnson (1988) study, table 21, showed a sharp decrease in short-term education participation rates for pay grades above E-5 for all three services in the study. The DMDC 1992 data

showed much more constant short-term participation rates for all grades, particularly amongst NCOs. This level pattern is very evident in the Army and USAF data. The Navy data do exhibit a slight drop in the senior petty officer ranks, but nowhere near the magnitude of the participation peak seen in the 1985 data. Only in the Marine Corps is there a distinct peak in educational participation rates that occurs at the E-5, E-6 ranks. The 1992 population seems to be participating fairly equally at all career stages, behavior that would make sense if participation in off-duty education were an accepted, even expected, practice as part of a military career.

Differences between the services may well reflect differences in opportunities and service member attitudes about educational attainment. For example, participation in off-duty education for both Navy and Marine personnel may be much more difficult due to frequent service aboard ships at sea or in units with high field duty rates. Recall the evidence from the interviews that not all assignments are created equal in terms of educational opportunities. Likewise, members of the various services or perhaps the services themselves seem to exhibit different attitudes toward education. At the 1997 Department of Defense Worldwide Education Symposium, Mr. Vernon Taylor, Head of Voluntary Education Programs for the Marine Corps, explaining the unique challenges for Marine educators remarked that "Marines join the Marines to be Marines not to get an education" (Brauchle, 1997). He went on to explain that Marines had to be persuaded that an education would make them a better Marine if they were to participate. Some

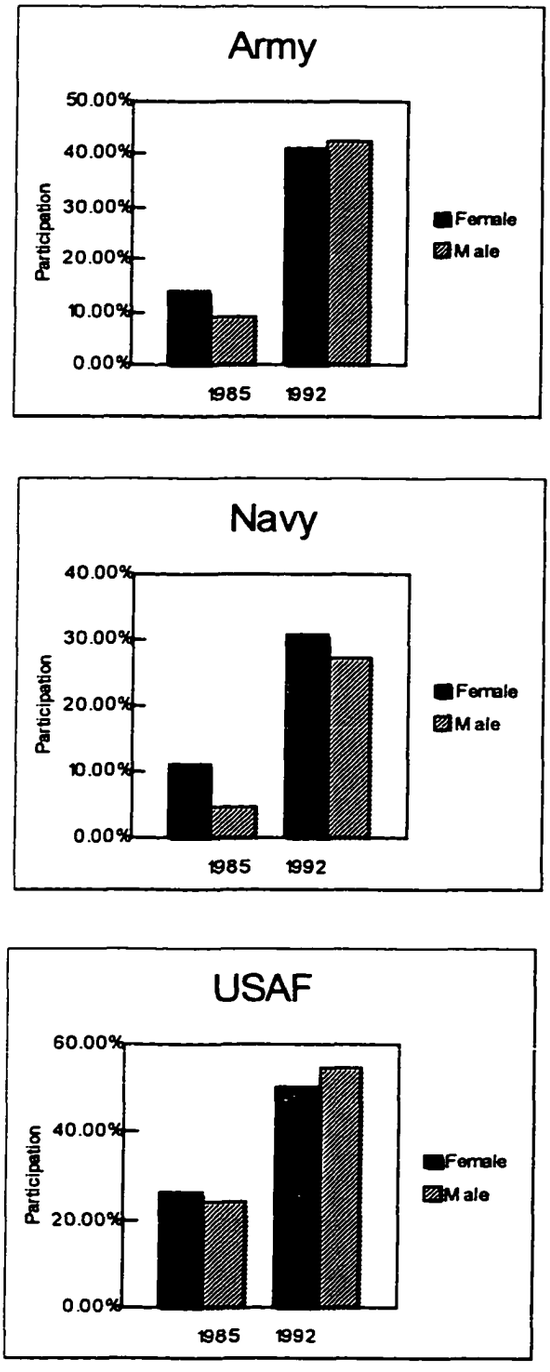


Figure 4. Long-term participation rates by sex. Boesel and Johnson (1988) data is labeled 1985. DMDC data set is labeled 1992.

have suggested that the Navy may value education for enlisted personnel less than the other services:

> In the enlisted ranks too, education outside of normal military training is supported with much more enthusiasm by the Army and Air Force than by the Navy, where the pursuit of voluntary education is taken according to prevailing perceptions, as evidence that the sailor places himself before the Navy. (Bushnell et al., 1990, p. 13)

Table 21.

Comparison of Short-term Education Participation Rates

	Army		Navy		USAF		Marines *
Grade	1985	1992	1985	1992	1985	1992	1992
E-3	5.6%	19.96%	4.00%	9.36%	20.90%	21.97%	9.80%
E-4	7.1%	22.39%	5.80%	11.92%	16.20%	31.10%	14.13%
E-5	11.1%	29.49%	7.70%	17.87%	17.80%	30.14%	20.27%
E-6	9.6%	33.14%	6.30%	19.01%	13.30%	25.95%	19.49%
E-7	7.2%	26.17%	3.30%	18.66%	12.30%	26.27%	15.91%
E-8	5.3%	31.81%	3.60%	16.52%	10.70%	36.90%	13.96%
E-9	2.9%	27.75%	4.10%	16.92%	3.60%	26.77%	9.81%

If the services had undergone a significant change in their philosophy of the worth of off-duty education, there should be other evidence in the data under analysis. One of the other noticeable differences in the education participation patterns between the Boesel and Johnson (1988) study and the analysis of the DMDC data set was in the relative participation patterns based on race and sex.

Recall that in the Boesel and Johnson (1988) data blacks and females participated at higher rates than whites or males in all three services examined. They attributed the

higher participation rate for these groups to a greater propensity for their members to join the service for upward mobility opportunities because the services had fewer institutional barriers than the private sector.

If that premise is so, it follows that whites and males join in higher numbers for reasons other than upward mobility. If the services had changed their view toward off-duty education and indeed it had become an integral part of a military career it is quite plausible that all service members who wished to remain in the service for a career, regardless of the reason why, would be likely to participate in off-duty education. If this were the case, we might expect education participation patterns based on demographics to change.

Indeed the 1992 DMDC data was strikingly different from the Boesel and Johnson (1988) data. With one exception, relative participation rates based on demographics have reversed. For all services whites are more likely to participate than blacks and except for the Navy, males are more likely to participate than females (see figure 4). Even in the Navy the difference in participation rates has closed markedly from the 1985 data. The differences in sea duty rates between males and females in the Navy may still account for the slightly increased participation rates of female members.

If we look a bit further we find evidence to support this change in education participation patterns by sex within Boesel and Johnson (1988). Their study contained an abbreviated analysis of a second data set. This data was from the National Longitudinal Survey of Youth Labor Market Experience (NLS). They analyzed the educational

participation of survey participants who had entered the armed services during the longitudinal study. The rather small sample consisted of 1200 people who had been in the military between 1979 and 1982. Education participation was based on a question that asked whether they had taken any courses for credit during their military service. The results were very interesting in that they varied from Boesel and Johnson's larger sample in two ways:

> First, the NLS data indicate that men are more likely than women to participate in voluntary education, while the TA data indicate that women are the more likely to participate, specifically in the Tuition Assistance program. Second, in the NLS analysis there is no perceptible relationship between the reenlistment intentions of participants and non-participants in voluntary education, while the analysis of TA data shows a marked difference in intentions between Tuition Assistance participants and non-participants. (1988, p.A-7)

The 1992 DMDC data and the NLS data both point to similar participation patterns and the neutral reenlistment effect. When we again ask why, the Boesel and Johnson (1988) report might provide the answer. Trying to explain the difference between the two data sets they analyzed they stated:

> The NLS data set comprises observations primarily on junior enlisted members between 1979 and 1982, a time when the enlisted force was substantially different from the force in 1985, both in terms of quality and motivation (Boesel, et.al., 1988 p.A-7).

Boesel and Johnson were probably alluding to the recruiting difficulties the service experienced during the mid to late seventies that resulted in many recruits entering service who had lower educational attainment and Armed Forces Qualifying Test (AFQT) scores. Alternatively, however, I might propose that the population is indeed different, but different in that their off-duty educational participation patterns have changed significantly from those recruits who had entered the service even a few years earlier. Recall the Boesel and Johnson (1988) TA data suggest that educational participation patterns are stable over time only for those who entered the service sometime after the 1975 to 1979 time frame. The NLS sample is firmly in this period. Perhaps what they were seeing was the change in how education is related to the military career, a change that is fully evolved by the 1992 DMDC survey.

The differences in participation rates by race and sex that we have just discussed are based on raw numbers that have not been adjusted for other differences in the sub-populations such as pay grade, education level, age, etc. We know from our own profiles of education participants that these factors do change the relative participation rates between groups (see table 17). These raw participation rates are used only so a comparison can be made between the data provided by Boesel and Johnson (1988) and the data in the 1992 DMDC data. It may well be that changes in other characteristics of these sub-groups accounts for the change in participation patterns between the two studies. While the differences noted provide far from conclusive confirmation of the emerging theory, neither do they reject it.

At this point, we are faced with strong evidence that something has changed in the relationship between participation in off-duty education and reenlistment during the seven years that separates the two data sets. One plausible explanation is that there has been a fundamental change in how the services view off-duty education, with the theory being that participation in off-duty education has become an accepted and expected part of a military career. That is, the military organization values educational participation and not only encourages enlisted members to pursue it, but demands that they do so. Again, the qualitative data supports this theory with several of the respondents using terms that suggest the organizational pressures to participate are substantial.

This also provides a possible explanation for the lack of a difference in the education participation effect on reenlistment based on the educational level of the service member. All service members are equally motivated to participate in off-duty education, early on because the service demands it and later because they value education for education's sake.

We might go so far as to say that participation in higher education has become part of the organizational culture.

Schein defines organizational culture as:

> (a) a pattern of basic assumptions, (b) invented, discovered, or developed by a given group, (c) as it learns to cope with its problems of external adaptation and internal integration, (d) that has worked well enough to be considered valid and therefore (e) is to be taught to new members as the (f) correct way to perceive, think, and feel in relation to those problems. (Schein, 1990, p.111)

The military seems to have adopted education as one of those cultural elements. The perception that education is good and improves performance in the organization is evident in both the stated values of the organization and organizational artifacts such as requirements for educational attainment for commissioning or promotion. The need for education is taught to the new member from recruitment on. "You know they really stressed it when they are recruiting. About getting involved with education." *(Air Force E-3)* The impression of many is if you're not going to school you're not going to succeed in the service. "Since I've been in the Army, every supervisor I've had, everybody has been telling me go to college, go to college. If you're not going to college you're wrong." *(Army E-4)*

If education as part of the organizational culture of the military is to explain the differences in the education participation effect between 1985 and 1992, we would have to propose not only a cultural element but a change in the organizational culture. Again, Schein provides a framework from which to analyze cultural change. He details six Primary Culture Embedding Mechanisms:

1. What leaders pay attention to, measure and control on a regular basis.
2. How leaders react to critical incidents and organizational crises.
3. Observed criteria by which leaders allocate scarce resources.
4. Deliberate role modeling, teaching and coaching.
5. Observed criteria by which leaders allocate rewards and status.
6. Observed criteria by which leaders recruit, select, promote, retire and excommunicate organizational members. (Schein, 1992, p.231)

If we look at these embedding mechanisms it becomes apparent that there is evidence that five of the six mechanisms are at work in embedding education as part of the military culture. All services and the Department of Defense have major agencies, staffs and budgets that are devoted to the voluntary education mission. Through these agencies the top leadership monitors, controls and pays attention to education on a continual basis. Even with the defense budget shrinking, Tuition Assistance funding has increased (Alley et al., 1995). The Department of Defense recently adopted a new Tuition Assistance policy that will equalize and increase access to TA dollars for most service members even though the policy will result in a significant increase in the amount of funding needed. These actions seem to provide evidence of the senior leaders' willingness to allocate very scarce resources to education. The interviews I conducted provided ample evidence of organizational leaders providing awards and good performance reports (awards and status) for those who participate in off-duty education. The formal and informal weight given to educational attainment in the enlisted promotion systems as well as the requirement for educational credentials for both officer and enlisted recruits provides a very visible measure of the criteria the organization values for these decisions.

One culture imbedding mechanism mentioned by Schein (1992) we have not mentioned concerns the leaders' reactions to organizational crises. Closely related to this mechanism is the underlying motivation for the cultural change itself. If the organizational culture did change in regard to the value of education, when and why did this occur? I offer the following explanation for both of these questions.

In 1972, in large part because of the anti-war sentiment resulting from the Vietnam War, Congress, by eliminating the draft, created the All Volunteer Force (AVF). The military almost immediately had recruiting problems. When the draft was ended the military pay and benefit structure was overhauled to attract young people into the service. Although initially successful, by the late 70s the military found recruiting goals harder and harder to fill, particularly for the Army. Fewer numbers of "high quality" (those in the 50th percentile or higher on the Armed Forces qualifying exam) recruits were enlisting.

The crisis that the military faced was a shortage of qualified recruits. Their response was to offer educational benefits to attract the 'right' people. The 'right' people desired education. Thus, we observe the sixth culture embedding mechanism. The services placed a high value on education to solve the crisis they were experiencing.

Many policy makers perceived that part of the problem was the desire by many of these 'high quality' youths to pursue a college education. The availability of student loans and other federal student aid programs was seen as competition for the services (Congress of the U.S. 1982). The decade beginning in the mid-seventies can surely be called the decade of the GI Bill. Beginning with the ill-fated and short lived Veteran's Educational Assistance Program (VEAP), through a myriad of test programs and culminating with the New or Montgomery GI Bill in 1985, Congress studied and debated military educational benefits extensively (Angrist, 1992). The common thread throughout this entire period is the discussion of educational benefits primarily as a recruitment tool. The driving goal of both the services and the Congress is to recruit educated and bright soldiers. (Congress of

the U.S. 1980; Congress of the U.S. 1982; Congress of the U.S. 1983; Congress of the U.S. 1985; Congress of the U.S. 1986).

The evidence was overwhelming that the goal of these programs in the eyes of both the services and the Congress was to attract 'high quality' youths into the services. The strong consensus in the literature is that these programs met that goal. Educational benefits became a prime marketing tool to entice the 'right' people into the services. High school graduates of high mental ability are more likely to successfully complete training and their full enlistment term (Congress of the U.S. 1986). These are the same recruits who value the educational benefits the most. This desire is sometimes a double edged sword, cutting both ways. Although the evidence is mixed, there is some concern that military members who value higher education and have post-service educational benefits available use them. That is, they depart the service upon the end of their initial enlistment to finish their education (Polich et al., 1982; Fernandez, 1980; Smith et al., 1990; Congress of the U.S. 1982). To counter this possibility, the services have aggressively marketed their in-service educational opportunities, the voluntary education programs. To have a job and still meet your educational goals as a sentiment expressed several times by those in the interviewed sample.

In addition to this change in those whom they recruited, the military was undergoing other transitions as well. The eighties were a time of significant growth in military spending. Much of that spending was for high tech weapons which the military termed force multipliers. The concept was that the US Forces needed superior technology

to overcome the superior numbers of Soviet forces. This was true for all the services and high technology weaponry was procured for infantrymen as well as carrier pilots. With the technology came the need for skilled operators and technicians and hence the need for education.

The military's response to this need was to recruit 'college capable' youth into the service. They did this by aggressively marketing the educational opportunities of a military career. Remember the Army College Fund and the "Be All You Can Be" advertising campaigns?

I believe this was the start of a new high tech military environment populated by servicemembers who were capable of higher education and also had the desire. The result was a new cultural value spawned by new people in the organization and a new organizational environment.

Recall that the data suggest that education participation patterns began to change approximately six to ten years prior to the 1985 data collection used by Boesel and Johnson (1988). This would place the change starting somewhere between 1975 and 1979, firmly within the time period under discussion. If that change indeed began then we could expect to see it fully implemented within ten to fifteen years. Those military members who had grown up under the old system and risen to the top based on the old values would be retired by that point. Those mid-career people who did not embrace the new values would not be advanced and would likely face early retirements because of the services 'up or out' promotion policies. Thus we could expect to see the entire

organization adopting the new educational value by 1992, the date of the DMDC data collection. Indeed, from the analysis of the 1992 DMDC data it appears that the off-duty education participation patterns remained stable for most of a career. The time line proposed for this change coincides with the impressions of the more senior personnel interviewed who place the strongest emphasis on off-duty education in the eighties.

The current 'de-emphasis' reported by some of the people may, in fact, be only a temporary respite because of the high operations tempo that has made it more difficult for some personnel to attend off-duty education. In fact, a compelling case can be made that the military drawdown will actually increase both the demand and emphasis on education (Ludwig et al., 1992). As the military recruits fewer people they can afford to become more selective recruiting those with the best preparation and most desire for additional education. As the military force decreases, manpower will be replaced by technology which will require more education and training to use effectively. At least some of those interviewed agreed with the assessment that the downsizing of military forces during the last decade may actually force more emphasis on educational attainment.

> You'd find that if you think education is absolutely worthless, you'll probably find yourself doing a job hammering nails all day long or being a ditch digger or something along that line. Without being willing to change and grow with the changes that are occurring in the military, it would be, to give you an example, it would be, instead of having a computer on you desk you insist on using an old manual keyed typewriter. How long would it take you to put together a document for publication versus using a computer with the wonderful tools that are available with it. Without change, advances in technology would be worthless.
> *(Air Force E-7)*

> When I came in we used to put these little punch cards in, in finance. You know, we went from punch cards to you know to computers we have today. So it's very important that you get people either educated or have the ability to learn because

> the force reduction that has happened. It used to be that it was an assembly line job where you only did a certain part of the thing. Now they expect you to do seven or eight of the pieces and then move it on to someone else. *(Air Force E-5)*

While far from conclusive, both the quantitative and qualitative data provide evidence of this emerging theory. The education participation effect has not disappeared, but rather has been absorbed into the military culture where it hides behind other variables, such as pay grade and satisfaction with the military way of life. Being military means going to school and believing in the goodness of education. The hiding of the effect is not a simple correlation of the variables, although at least for pay grade the correlation with long-term participation is moderately high at 40%. What I am proposing is a cultural value so strong that to not accept its validity is to not accept the culture and hence to not reenlist. A value exhibited by the unusually high educational aspirations of the military student and the love and belief in lifelong learning so many of them seemed to have developed through an evolutionary process that started from an external 'shove' by the military system. I can offer no other explanation for the drastic changes in participation patterns based on pay grade or the higher short-term participation rates for those who have earned their degrees in service versus those who entered with them.

CHAPTER VI

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND IMPLICATIONS

Summary

The purpose of this study was to explore the relationship between participation in off-duty education and enlisted retention in the US Military Services. In particular, the focus was on possible differences in this relationship for various sub-groups. The primary research method involved the quantitative analysis of a large survey data set obtained from the Defense Manpower Data Center. The survey was conducted in 1992 and contained approximately 60,000 responses and 250 fields. In addition to the quantitative data analysis, a small scale qualitative portion was conducted to provide an additional analysis tool for interpreting the quantitative data.

The early results obtained from simple regression models were encouraging. They showed a statistically and practically significant relationship between participation in off-duty education and retention in the service. As more complex models were used the results became puzzling. Most of the sub-group behaviors hypothesized, based on the existing literature, were supported by the quantitative analysis. Specifically, servicemembers who wanted to participate in off-duty education were more likely to reenlist than those not interested in participating. This relationship was most robust for those who had an education level of associate's degree or below. Participation in off-duty education also reduced the negative effect that low job satisfaction has on reenlistment and

increased the member's overall satisfaction with the military way of life. A military member's satisfaction with his or her educational opportunities is positively related to his or her overall satisfaction with the military way of life. The education level of the service member did not seem to be related to desire for educational participation in the expected way. The data did not show a stronger relationship between off-duty education participation and retention for those with higher educational attainment. In fact, a weak statistical case could be made for just the opposite. That is, participation in off-duty education has the largest positive effect upon reenlistment for those with no college upon entrance into the service.

Several hypotheses about the spouse's impact on retention were also tested. The data supported the following statements. Military members whose spouses support their staying in the service are more likely to reenlist. Those spouses most satisfied with the military way of life are more likely to support reenlistment by the service member. The spouse of a service member who participates in the voluntary education program is more supportive of that member's staying in the service. The spouse's satisfaction with his or her opportunities for education and training effects that spouse's overall satisfaction with the military way of life. The analysis failed to support a positive relationship between a spouse's participation in educational activities and support for the reenlistment decision. Neither did it support a relationship between the quality of the educational opportunities available for the military spouse and the spouse's support of the member's staying in the service.

The complex models used to explore the connection between off-duty education participation and reenlistment showed that long-term participation in off-duty education was positively related to reenlistment, while short-term participation was negatively related. These results could be expected as previous studies (Boesel et al., 1988; Githens et al., 1977) had shown similar results. The negative effect of short-term participation is explained by those who have decided to leave the service participating in greater numbers as preparation for the civilian job market. What was puzzling about both of these effects was the very small practical effect they had on reenlistment probability. The education participation effects accounted for only one one-hundredth of one percent of the variation in reenlistment intention in the model. This was a drastic departure from the Boesel and Johnson study used as a benchmark. It had shown long-term participation to be the most important factor in the reenlistment decision.

The models revealed that overall satisfaction with the military way of life and pay grade accounted for nearly all of the variation explained by the model. For married service members in the couples data set, the spouse's support for reenlistment was the most important factor in the model followed by pay grade and overall satisfaction with the military way of life.

Profiles were also developed of both long and short-term participants in off-duty education. The long-term participant was more likely to be in the Air Force, female, married, white, in a higher pay grade, at a later enlistment period, satisfied with the military way of life and have a higher expectation of a good civilian job than a

non-participant. The participant was less likely to be in the Navy, have had an advanced education level at entrance to the service or have high job satisfaction. The short-term participant was considerably different. They were more likely to be in the Army, female, black, single, satisfied with both job and military way of life and have higher expectations of a good civilian job than a non-participant. The short-term participant was less likely to be a Marine, or higher in pay grade than a non-participant.

Another significant finding developed from the quantitative analysis. The patterns of participation had changed markedly since the Boesel and Johnson (1988) study. The earlier study revealed the participation patterns of the servicemembers were not steady over the period represented by those in the study. Those with relatively little service time participated at much higher rates than those more senior. This held true for both short and long-term participation. Those who had been in the service ten years or less participated in great numbers while those in more than ten years had low participation rates. Additionally, while Boesel and Johnson found women and minorities participated most often, the 1992 data revealed higher participation rates for white males.

The qualitative portion of the study was undertaken to try to shed light on the quantitative results. Thirty-one interviews were conducted with Army and Air Force participants in off-duty education. Several themes emerged from those interviews. The most evident theme was the high value the military placed on off-duty education. The interviews provided overwhelming evidence the military expressed a strong institutional value of education in statements, policies, reward systems, promotions and attitudes.

The interviews also provided support for the position that accessibility to educational opportunities varies throughout a servicemember's career and is influenced by location, assignment, and career field.

Many service members seemed to exhibit an evolutionary change in their attitudes toward education. Education participation often started through some external stimulus such as desire for promotion, encouragement of a supervisor or peer, but then grew into an internally driven motivation. The result for many was a genuinely expressed love of education and a commitment to lifelong learning.

Conclusions

The quantitative analysis alone supports the conclusion that long-term participation in off-duty education is significantly and positively related to intention to reenlist when several other variables thought to be related to retention are controlled for. Additionally, the data support the statement that the desire for off-duty education, whether the service member participates or not, increases the probability of reenlistment. The reenlist intention of servicemembers who participate in off-duty education is less sensitive to job dissatisfaction and those who participate exhibit greater satisfaction with the military way of life. The spouses of service members who participate in off-duty education are more likely to support the reenlistment decision as are those spouses satisfied with their own educational opportunities.

Having said all of that, from a practical point of view, the overall education participation effect is very small, accounting for very little of the variation in intention to reenlist. This is a reversal from the previous most similar study (Boesel et al., 1988). Further analysis of the variables used in the models reveals overall satisfaction with the military way of life, pay grade and the spouse's support for the reenlistment decision account for nearly all of the variation in reenlistment intention present in the model. Analysis of the participation patterns of both the previous data (Boesel et al., 1988) and the 1992 DMDC data set leads to the conclusion that there has been a fundamental change in the relationship between off-duty education and retention in the intervening seven years.

Both the quantitative and qualitative data point to the conclusion that the military has adopted educational participation as a cultural element. That is, participating in off-duty education is part of being in the military just as is wearing a uniform. Because this element is so entwined within the environment, satisfaction with the military way of life and advancement or paygrade account for most of the variation in reenlistment intention. Actual participation is not required, rather the acceptance of the value or 'rightness' of education is enough. I hypothesize that this cultural change has been driven by three different influences, the end of the draft being the first. Difficulties recruiting qualified servicemembers necessitated targeting college capable young people. The military did this through the enticement of both in-service and post-service educational benefits. The success of this approach resulted in the second influence in this cultural change, the service members themselves. A service populated with college capable and

attending members created forces for cultural change. The last element was changes in force structure and the technology of war that required higher educational levels for mission accomplishment. The combination of these three elements resulted in a fully absorbed culture of education by the late eighties or early nineties. Participation in off-duty education is indeed related to retention in the service, but in a highly complex manner that cannot be fully analyzed through quantitative methods alone.

Recommendations

I offer the following recommendations that carry implications for both policy makers and researchers. One of the first things that comes to mind is the complexity of the construct 'participating in off-duty education'. Previous studies have used measures of long-term participation and short-term participation interchangeably. As this study has revealed, the two measures do not get at the same construct. This difference may explain why previous studies that looked at participation and retention have produced conflicting results. They may have been looking at different things. Policy makers should insure that the measure they are looking at indeed captures the construct they think it does. Further research is warranted in establishing a better understanding of the differences and similarities of these two concepts.

That leads to my second recommendation. Both policy makers and researchers are cautioned not to take too simplistic a view of the retention phenomena. The best model I tested only accounted for 40% of the variation in intention to reenlist. Most of that

accounted for by a measure of "overall satisfaction with the military way of life," a concept hard to define and quantify. Further research is needed to develop better models to predict reenlistment.

Closely related to the last recommendation is another caution. The Armed Forces have successfully inculcated an entire organization with a strong appreciation and desire for education and thus educational opportunities. This cultural element is a complex one that merits further study. Both qualitative and quantitative approaches are needed to better understand how and when the cultural change took place and how it effects the attitudes and behaviors of both the members of the organization and the organization itself. It is highly likely that not all services and not all parts of each service have the same cultural values. Rather, it is highly likely that sub-cultures exist between and within each service. Large changes in educational policies, reduction in benefits or other wholesale changes to the military voluntary education programs are apt to have significant effects that were not foreseen. Policy makers should use extreme caution lest they find themselves fighting the culture they have so successfully created.

Implications

Recall that the purpose of undertaking this research was to provide information to aid in curriculum design and marketing decisions regarding employer sponsored off-duty education programs. The results of the research suggest implications that are directly related to this objective.

The military services seem to have developed a strong educational imperative as part of the organizational culture. That imperative provides strong motivation for service members to participate in off-duty education. It does not, however, provide strong guidance on the selection of educational goals, especially when members are just beginning their education. The military educational community and the institutions that serve it, must exercise the highest ethical standards in ensuring that the curriculum the servicemember pursues will result in quality educational and self-development outcomes and not merely result in providing a "ticket punching" credential that is useful only for military career progression.

In a similar vein, institutions serving the military student should resist the temptation to market their programs based solely on the ease or speed of obtaining a credential for career advancement and should concentrate instead on the long term outcomes that a student can expect from participation in the program.

This study suggests that the link between participation in off-duty education and retention is related to the cultural value placed on education by the organization. If that is the case, researchers studying the relationship between civilian employer sponsored education and job retention may find these results useful if the organization under study exhibits similar organizational values. On the other hand, assuming that the organizational values play a significant role in the results I have observed, the findings should be viewed with extreme caution if intended to guide practice in an organization with different cultural views toward educational participation.

APPENDIX A

ALPHABETICAL LIST OF SELECTED VARIABLES

Variable Name	Description	Type	Range
ARMY	Service affiliation 1=Army	Dummy	0-1
BLACK	Respondents race 1 if black otherwise 0	Dummy	0-1
EDUC	spouse's satisfaction with his or her education & training opportunities	Contin	-2 to 2
EDWANT	Desire to participate in off-duty education previous year whether you did or not. yes=1 no=0	Dummy	0-1
END	Education level when survey was conducted 1992	Contin.	0-6
ENLPER	Enlistment currently serving on 1,2,3,4,5 or more	Contin	1-5
JOBCH	Respondent's assessment of the changes of finding a good civilian job. From None to Certain	Contin.	1-11
JOBSAT	Measure of overall satisfaction with job	Contin.	-2 to 2
LONGPART	Long-term participation requires increase in education level to at least some college.	Dummy	0-1
LONGEND	Interaction Term LONGPART * END	Contin	0-6
LONGSTRT	Interaction Term LONGPART * START	Contin	0-6
LOWSAT	Indicated low job satisfaction 1= low satisfaction	Dummy	1-0
MALE	1 if Male 0 if Female	Dummy	0-1
MARR	Marital Status at time of survey, 1=married	Dummy	0-1
MILSAT	Measure of overall satisfaction with Military Way of Life	Contin.	-3 to 3
NAVY	Service affiliation 1=Navy	Dummy	0-1
OTHER	Respondent's race 0 if black or white otherwise 1	Dummy	0-1
PGRADE	Military Pay Grade E-1 through E-9	Contin	1-9
REUP	Probability of reenlisting in 10% increments	Contin.	0-10
SATPART	Interaction Term of LONGPART*JOBSAT	Contin	-2 to 2
SHRTPART	Short-term participation in education requiring attendance at a civilian school in the last year.	Dummy	0-1

SPEDOP	Spouse's satisfaction with the educational opportunities available to him or her	Contin	-2 to 2
SPSAT	Overall spouse satisfaction with the military way of life	Contin	-3 to 3
SPSUPPT	Support for spouse reenlisting in service	Contin	-2 to 2
START	Education level at entrance to service	Contin.	0-6
STUDENT	Was military member's spouse a student.	Dummy	0-1
TAFMS	Total Active Federal Military Service in months	Contin	2-502
TIMELFT	Time remaining on current enlistment	Contin	1-7
USAF	Service affiliation 1=USAF	Dummy	0-1
WHITE	Respondent's race 1 if white otherwise 0	Dummy	0-1

APPENDIX B

LIST OF INTERVIEW QUESTIONS

Tell me a little bit about yourself and why you joined the service.

What is your educational background?

Do you have any educational goals?

Have they changed since you entered the service?

Why do you participate in off-duty education?

Do you think the service values education? How about your commander? Supervisor?

What factors did/will you consider when making the reenlistment decision?

Did or does your educational opportunities play a role in the decision to reenlist?

How does your spouse feel about education?

When will you stop/start your participation in off-duty education?

Do you think the service's emphasis on education has changed over the past 10-15 years?

How satisfied are you with your job?

How satisfied are you with the military way of life?

Demographic Information:

Service Pay Grade Time in Service

Sex Race

Education level at entrance to service.

Education level now.

LITERATURE CITED

Alley, T. R., Mosley, W. S., Spivey, G. L., Bolton, E. L. J., Mwambola, L., Thompson, J. F., Findley, B. F., Renehan, J. N., & Weinstein, J. (1995). Air Force Graduate and Undergraduate Educational Programs: Need, Structure and Focus. Montgomery, AL: Air University. ACSC/CAE/067/95-05.

Anderson, C. L. (1991). The Tuition Assistance Program in the Military. U.S. Educational Resources Information Center.

Anderson, C. L. Educational Resources Available for Transition of Servicemembers. In C. L. Anderson (Ed.), Washington, DC: Office of Educational Research and Improvement.

Angrist, J. D. (1993). The Effect of Veteran's Benefits on Education and Earnings. *Industrial and Labor Relations Review, v46*(n4), 637-652.

August, D. S. (1994). Army Life V. Life in the Army: The Relationship Between Quality of Life Program Utilization and Army Career Intentions. Santa Monica, CA: RAND. RGSD-125.

Boesel, D. P.,& Richards, J. A. (1982 Nov). Enlistment Motivation in the All-Volunteer Force Environment: A Review of Major Surveys. In D. P. Boesel (Ed.), Alexandria, VA: Defense Manpower Data Center.

Boesel, D. P., & Johnson, K. (1984). Why Service Members Leave the Military: Review of the Literature and Analysis. Arlington, VA: Defense Manpower Data Center.

Boesel, D. P., & Johnson, K. (1988). The DOD Tuition Assistance Program: Participation and Outcomes. Arlington, VA: Defense Manpower Data Center.

Brauchle, K. C. *Notes from The DOD Worldwide Education Symposium.* (un pub)

Buddin, R. J. (1991). Enlistment Effects of the 2+2+4 Recruiting Experiment. Santa Monica, CA: RAND. R-4097-A.

Bunde, G. R., Doucette, R. E., & Biersner, R. J. (1981). Characteristics of career-oriented personnel applying for off-duty education. *Vocational Guidance Quarterly, v29*, 315-323.

Bushnell, D. S., Batley, L. B., Blacksten, R. D., Dugan, B. A., Elder, B. L., Hagg, E. V., Roth, C. M., Sticha, P. J., & Waters, B. K. (1990). An analysis of overseas postsecondary education services. Alexandria, VA: HumRRO International Inc.

Chow, W. K., & Polich, J. M. (1980). Models of the First-Term Reenlistment Decision. Santa Monica, CA: Rand. R-2468-MRAL.

Compart, A. (1997, August 11). Voluntary Education Proves Popular With the Troops. *Air Force Times*, 11

Congress of the U.S. (1980). Educational Incentives and the All-Volunteer Force. Hearing before the Committee on Veteran's Affairs, United States Senate, Ninety-Sixth Congress, Second Session on S. 2020, S. 2596 and Related Bills. Senate Committee on Veterans' Affairs:

Congress of the U.S. (1982). New Educational Assistance Program for the Military to Assist Recruiting. Hearings before the Military Personnel and Compensation Subcommittee of the Committee on Armed Services. House of Representatives. Ninety-Seventh Congress. First and Second Sessions. House Committee on Armed Services: Military Personnel and Compensation.

Congress of the U.S. (1983). Proposals to Establish a New Educational Assistance Program for Veterans and Members of the Armed Forces, and Review of the Veterans Educational Assistance Program (VEAP). Hearing before the Subcommittee on Education, Training and Employment of the Committee on Veterans' Affairs. House of Representatives, Ninety-Eight Congress, First Session. House Committee on Veteran's Affairs: Education, Training and Employment.

Congress of the U.S. (1985). Oversight Hearing on the New GI Bill. Hearings before the Subcommittee on Education, Training, and Employment of the Committee on Veterans' Affairs, House of Representatives, Ninety-Ninth Congress, First Session. House Committee on Veterans' Affairs: Education, Training, and Employment.

Congress of the U.S. (1986). New GI Bill and H.R. 3747, Veterans' Education Amendments of 1986. Hearing before the Subcommittee on Education, Training, and Employment of the Committee on Veterans' Affairs. House of Representatives, Ninety-Ninth Congress, second Session. House Committee on Veterans' Affairs: Education, Training, and Employment.

Congress of the U.S., H. C. (1989). Montgomery GI Bill Amendments. Parts 1-2. Report To Accompany H.R. 1358, Which on March 9, 1989 was Referred Jointly to the Committees on Veterans' Affairs and Armed Services. Including Cost estimate of the Congressional Budget Office. Washington, DC:

Cross, K. P. (1981). *Adults as Learners: Increasing Participation and Facilitating Learning.* San Francisco: Jossey-Bass.

Defense Activity for Non-traditional Education Support. (1994). Voluntary Education Program Fact Sheet (FY93). Pensacola, FL.

Department of the Army. (1997) *Memorandum: Soldier Tuition Assistance Usage and Documented Education Plans.* (un pub)

DOD.(1991). 1992 Department of Defense Survey of Enlisted Personnel. Washington, D.C.

Eurich, N. P (1985). Corporate Classrooms: The Learning Business. A Carnegie Foundation Special Report.. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Fernandez, R. L. (1980). Issues in the Use of Post-Service Educational Benefits as Enlistment Incentives. Santa Monica, CA: RAND. N-1510-MRAL.

Fernandez, R. L. (1982). Enlistment Effects and Policy Implications of the Educational Assistance Test Program. Santa Monica, CA: Rand Corp. R-2935-MRAL.

Fleming, J. (1981). Special Needs of Blacks and Other Minorities. In A. W. Chickering (Ed.), *The Modern American College: responding to the New Realities of Diverse Students and a Changing Society.* (pp. 279-295). San Francisco: Jossey-Bass.

Githens, W. H., & Wilcove, G. L. (1977). Relationship Between Navy Off-Duty Education Programs and Recruiting, Performance, and Retention.. San Diego, CA: Naval Personnel Research and Development Center. Technical Rpt 78-8.

Green, E. K., & Dunlap, S. W. (1988). Demographic Analysis of the Navy Tuition Assistance Program.. Orlando, FL: Naval Training Systems Center. Special Report 88-003.

Houle, C. O., Burr, E. W., Hamilton, T. H., & Yale, J. R. (1947). History and Purposes. In C. O. Houle (Ed.), *The Armed Forces and Adult Education.* (pp. 1-45). Washington, DC: ACE.

House Committee on Veteran's Affairs. (1984). Veteran's Educational and Employment Amendments of 1984. Report to Accompany H.R. 5398. House of Representatives, 98th Congress, 2d Session. Washington, DC: Congress of the U.S. House-R-98-775.

HQ DA. (1993). *Army Regulation 621-5, Army Continuing Education System.* Washington, DC.

HQ USAF. (1994). *Air Force Instruction 36-2306, The Education Services Program.* Washington, DC

Kwang, K., Collins, M., Stowe, P., & Chandler, K. (1995). Statistics in Brief. Washington, DC: US Dept of Education. NCES 95-823.

Ludwig, M.,& Hexter, H. The Impact of Military Drawdowns on Student Assistance Programs. In M. Ludwig & H. Hexter (Eds.), Washington, DC: Office of Educational Research and Improvement.

Lynton, E. A. (1983). Higher Education's Role in Fostering Education. *Educational Record, 64*(4), 18-25.

Martindale, C. J., & Drake, J. B. (1989). Factor Structure of Deterrents to Participation in Off-Duty Adult Education Programs. *Adult Education Quarterly, v39 n2*, 63-75.

Merriam, S. B.,Ed., & Cunningham, P. M.,Ed. (1989). *Handbook of Adult and Continuing Education.* San Fransciso: Jossey-Bass.

Merriam, S. B., & Caffarella, R. S. (1991). *Learning in Adulthood.* San Francisco: Jossey-Bass.

Norris, D. G., Lockman, R. F., & Maxfield, B. D. (1997). Understanding Attitudes About the Military Way of Life.. Arlington, VA: Defense Manpower Data Center. 97-008.

NTU. (1992). *NTU Bulletin.* IX No. 1. *1992-1993 ed.*

Orthner, D. K. (1980). Families in Blue: A Study of Married and Single Parent Families in the U.S. Air Force.. Greensboro, NC: Family Research and Analysis, Inc.

OSD. (1994). Education Programs in the Department of Defense. Washington, DC: DANTES, Office of the Assistant Secretary of Defense for Force Management and Personnel (DOD).

Polich, J. M., Fernandez, R. L., & Orvis, B. R. (1982). Enlistment Effects of Military Educational Benefits. A Rand Note. Santa Monica, CA: Rand Corp. RAND-N-1783-MRAL.

Presthus, R. V. (1962). *The Organizational Society: An Analysis and a Theory.* (First ed.). New York: Alfred A. Knopf.

Ramsberger, P. F. (1993). Influences on the Military Enlistment Decision-Making Process. Arlington, VA: DMDC. DMDC Report 93-004.

Rose, M. R. (1974 April). A Summary of Voluntary Education in the Armed Forces. In M. R. Rose (Ed.), Washington, DC: Office of the Assistant Secretary of Defense for Manpower and Reserve Affairs (DOD).

Rosow, L. A. (1979). Kimberly-Clark Corporation's Educational Opportunities Plan: A Case Study. Worker Education and Training Policies Project. Washington, DC: National Institute for Work and Learning.

Schein, E. H. (1990). Organizational Culture. *American Psychologist, 45*(2), 109-119.

Schein, E. H. (1992). *Organizational Culture and Leadership.* (Second ed.). San Francisco: Jossey-Bass.

Schendt, T. G. (1986). Qualified Educational Assistance Programs: Making the Grade. *Employee Benefits Journal, 11*(4), 2-5.

Schwartz, R. (1963). Non-Military Education in the United States Army and Air Force. Dissertation. New York University.

Smith, D. A., Hogan, P. F., & Goldberg, L. (1990). Army College Fund Cost-Effectiveness Study. Arlington, VA: SRA Corp.

Spector, P. E. (1993). *SAS Programming for Researchers and Social Scientists.* Newbury Park, CA: Sage.

Strehlow, T. G. (1967). History of the Army general education program: Origin, significance, and implication. Dissertation. George Washington University.

U.S. Senate. (1954). Armed Forces Information and Education Programs. Report to Accompany S.3401. Committee on the Armed Forces:

Vaughan, R. J. (1989). Education, Training and Labor Markets: Summary and Policy Implications of Recent Research by Jacob Mincer. New York, NY: National Center on Education and Employment.

War Department. (1947). Memo 85-40-1 Policy for Off-Duty Extension Group Study Classes of the Army Education Program in the Zone of the Interior. Washington, DC: War Department.

War Department. (1948). Memo 85-40-1, Change 1. Policy for Off-Duty Extension Group Study Classes of the Army Education Program in the Zone of the Interior. Washington, DC: War Department.

Westat Inc. (1993). Data Weighting Report.. Rockville, MD: Westat Inc. MDA 903-92-0219.